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Clark Murdock  
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Ian Williams  
Michael Dyer

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# Contents

V	List of Tables
VI	Acknowledgments
VII	Executive Summary
1	Introduction
4	<b>Chapter 1: The Path to a Highly Proliferated World</b>
4	Defining the Assumed Future of 2030+
4	Trends and Events Driving the Evolution of a Highly Proliferated World
7	Taxonomy of Actors
9	Paths to a Highly Proliferated World: Regional Dynamics
11	The Pace of Proliferation and Its Impact
13	Differentiation of Capabilities
18	<b>Chapter 2: Analysis of Tabletop Exercises</b>
19	Summary of Tabletop Exercise Game Play
19	East Asia Tabletop Exercise Game Play
21	Middle East Tabletop Exercise Game Play
23	Analysis of Tabletop Exercises
27	<b>Chapter 3: Rules of the Game</b>
27	How a Highly Proliferated World Might Function
32	Rules of the Game in a Highly Proliferated World
38	<b>Chapter 4: Key Deterrence Concepts</b>
38	Deterrence
39	Alliances and Extended Deterrence
40	Strategic Stability

43	<b>Chapter 5: Implications for the United States</b>
43	America’s Role in a Highly Proliferated World
44	Policy Credibility and Clarity
45	Nonproliferation and Counterproliferation
45	Nuclear Force Strategy and Posture
48	<b>Chapter 6: Areas for Further Research</b>
51	<b>Appendix 1: Comparison of Past Thought Experiments</b>
60	<b>Appendix 2: Tabletop Exercise Force Tables</b>
66	<b>About the Authors</b>

# List of Tables

9	Table 1-1: Taxonomy of Assumed 2030+ HPW
16	Table 1-2: Hypothetical Nuclear Force Structures of New 2030+ Nuclear Powers
58	Table A1-1: Comparison of Past Thought Experiments of a Highly Proliferated World
60	Table A2-1: United States Summary of Strategic Forces (East Asia TTX)
61	Table A2-2: South Korea Summary of Strategic Forces
61	Table A2-3: North Korea Summary of Strategic Forces
62	Table A2-4: Japan Summary of Strategic Forces
62	Table A2-5: China Summary of Strategic Forces
63	Table A2-6: United States Summary of Strategic Forces (Middle East TTX)
64	Table A2-7: Saudi Arabia Summary of Strategic Forces
64	Table A2-8: Iran Summary of Strategic Forces
65	Table A2-9: Turkey Summary of Strategic Forces

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# Executive Summary

For decades, the United States has led the effort to stem the spread of nuclear weapons, both among potential adversaries and even among its allies and partners. The present state of extended deterrence and of the nonproliferation regime, however, is open to many doubts. What happens if the nonproliferation regime should break down altogether? What happens if extended deterrence should fail, and allies no longer believe in the credibility of the U.S. nuclear umbrella? At the least, assumptions that many in the United States currently entertain about the reduced salience of nuclear weapons to U.S. and global security could well be turned upside down.

This study does not predict the emergence of a highly proliferated world (HPW), but is rather a thought experiment predicated on the assumption that an HPW could exist in the 2030 timeframe. The study explores how such a world might emerge, what it might look like, how it might impact our present conceptions of deterrence and extended deterrence, and what it would mean for the United States in the international order, and for global order itself.

## The Path to a Highly Proliferated World

Understanding how and why an HPW evolved is critical to understanding how it is likely to function. This study assumes that significant global changes would *not* be required for an HPW to emerge by 2030. On the contrary, the continuation of current trends could well be sufficient for the emergence of an HPW, aided perhaps only by continued perceptions and doubts about the failure of U.S. extended deterrence.

The study identifies trends and forces that might push the world toward wider proliferation:

- *The dominance of U.S. conventional power.* Deterring U.S. intervention will be a prime motive for some new members of the nuclear club.
- *Erosion of U.S. extended deterrence.* The loss of credibility of the U.S. “nuclear umbrella” reflects both increased regional threats, particularly by new nuclear-armed states (like North Korea) and near-nuclear powers (like Iran), and the growing reality and perception of American decline in relative power and retrenchment in terms of grand strategy.
- *Threats from nuclear armed adversaries.* When facing existential threats, nations capable of getting nuclear weapons would likely get them.
- *Growing availability of relevant technology and knowledge.* North Korea is an example of what a determined state can accomplish, despite a lack of resources and economic development. Better-resourced states may have even less difficulty if similarly motivated.

- *Nuclear employment.* The detonation of a nuclear weapon is not a necessary precondition for accelerating nuclear proliferation. The detonation of a nuclear weapons would, however, likely hasten and expand proliferation.

These five factors need not all apply in the calculus of any given nation state, but their existence surely would weigh upon and significantly shape the emergence of an HPW.

### *Taxonomy of Actors*

The study’s assumed HPW contains 15 nuclear powers—the current nine, plus Iran, Saudi Arabia, Turkey, South Korea, Japan, and Poland. Growth beyond 15 would likely further complicate, but not significantly change, the new nuclear context in which the major nuclear powers would operate.

This study posits five categories of nuclear powers within its assumed world of 15 or more nuclear powers:

- *Major nuclear powers* have large, highly survivable, and diversified arsenals and are capable of defending against small, unsophisticated nuclear attacks.
- *Minor nuclear powers* have sufficient survivable nuclear forces to withstand attacks from major nuclear powers and still inflict “unacceptable damage” in retaliation.
- *Weak nuclear powers* have small, crude arsenals that can inflict horrible damage if unopposed, but can be defended against by major nuclear powers and are at risk of preemption by major, and some minor, nuclear powers.
- *Nonnuclear states*, by definition, do not have nuclear weapons because they lack either the capability or will to pursue nuclear status.
- *Nonstate actors*, ranging from criminal organizations and radical religious cults to empowered individuals, pose security challenges to nation-states and contribute significantly to the level of disorder in the system. They are not, however, principal determinants of the nature of the international system.

### **Taxonomy of Assumed 2030+ HPW**

<i>Major Nuclear Powers</i>	<i>Minor Nuclear Powers</i>	<i>Weak Nuclear Powers</i>
China	France	Poland
Russia	India	Saudi Arabia
United States	Iran	Turkey
	Israel	
	Japan	
	Pakistan	
	North Korea	
	South Korea	
	United Kingdom	

## *Regional Dynamics*

The assumption that regional dynamics would be a primary cause of an HPW has frequently been predicted. Our survey, by no means exhaustive, of regional proliferation dynamics and regional pathways to a more highly proliferated world is as follows:

*Middle East:* The Iranian nuclear deal will likely position Iran in the mid-2020s as an industrial-strength threshold nuclear power with a robust breakout capability. Even a threshold status may cause Saudi Arabia to follow suit, perhaps followed by Turkey. The United Arab Emirates is another potential, but perhaps less likely, candidate.

*Northeast Asia:* The trends toward proliferation engulf both South Korea and Japan. Besides their respective distrust of North Korea and doubts about U.S. extended deterrence, their historical mutual distrust of one another stimulates their going nuclear in tandem. China's assertiveness in the region is likewise posited as increasingly adversarial.

*Europe:* As Russia continues to maintain an aggressive and provocative posture toward NATO and its other neighbors, the security challenge to European states is similar to that of the early days of the Cold War, but with key structural differences—the United States (in this 2030+ assumed future) is strategically retrenching, not engaging, and Germany is still “challenged” when it comes to the use of force. As the leader of Europe's “front-line states” and with potential doubts about its NATO allies behind it, Poland may opt for nuclear self-reliance. Already subject to proliferation pressures emanating from the Middle East, Turkey's historic and increasingly bitter rivalry with Russia could also lead it to consider nuclear capabilities.

## *The Pace of Proliferation and Its Impact*

The *pace* of increased proliferation could influence how well the international system copes with widespread proliferation. Should an HPW emerge more quickly, states might not have time to adapt; should it emerge more slowly, there might be time for new normative “rules” to take hold. At the same time, the slow acquisition of new nuclear states might not be better for stability. Indications that a nonnuclear power, say Poland, was beginning a long domestic nuclear program might well invite preventative war or other action by a nuclear state, in this case Russia.

## *Differentiation of Capabilities*

Another characteristic of an HPW is the differentiation of nuclear force structure within the taxonomy of nuclear actors. An HPW would likely comprise a wide range of nuclear postures, capabilities, and doctrines. Such diversity adds yet another layer of complexity to the reliable functioning of nuclear deterrence. Countries with nuclear forces structured for societal retaliation, or city-busting, for example, may find their nuclear arsenals less effective at deterring conventional conflict. Moreover, the presence of weak nuclear powers with underdeveloped and vulnerable arsenals may increase the risk of preemption or preventative attack by major, or even minor, nuclear powers. The temptation to preempt a nuclear

adversary may be just as great to a leader who perceives his or her own arsenal as being vulnerable.

## How a Highly Proliferated World Might Function

Having previously articulated a plausible path for the emergence of an HPW and gamed some of its potential operations, the study group turned to a critical elaboration of how an HPW might function and to formulate “rules of the game” for how nations might interact while preserving strategic stability and avoiding catastrophe.

The expected functioning of an HPW contains five characteristics:

- *A more obviously anarchic international system, characterized by power politics.* The primary distinguishing characteristic of an HPW is the significantly reduced influence of the United States in constraining actions of other states
- *The return of the nuclear shadow and a return of seriousness about deterrence.* In an HPW, the “nuclear shadow” cast over interstate conflict expands in both density and coverage. This resumed salience of nuclear weapons could well return in an HPW, representing a kind of “back to the future.”
- *Greater instability below the nuclear threshold.* Although nuclear weapons may induce states to be more cautious in making large-scale moves against an adversary, they may be more prone to risk taking at lower levels of conflict, such as engaging in proxy conflicts, hybrid warfare, or state-sponsored terrorism.
- *Persistence of geopolitics.* Despite more nuclear players, the underlying power disparities and geopolitical interests will still likely be the driving factor for state actors. Major nuclear powers like Russia, China, and the United States will be distinct from minor or weak nuclear powers, and will have the means to leverage their relative power position within their regions or areas of influence.
- *New strains on alliances, and their increased scarcity.* In an HPW, the cost and risk of alliances will increase, and their numbers will therefore likely decline. Global alliances and partnerships are unlikely to completely disappear, but their character would likely change. Alliances might be based less on extended deterrence or even mutual promises of defense, and more on other forms of defense cooperation.

## Rules of the Game in a Highly Proliferated World

The prospects for escalation below the nuclear threshold, and for continued regional and geopolitical power struggles and risk taking, together represent a recipe for instability. Identifying these characteristics and tailoring normative solutions to them may become a key feature of making deterrence work in an HPW. These rules, therefore, have a prescriptive quality. As used here, these “rules” refer to possible behavioral norms, customs, or

understandings that nations agree to make their interactions more predictable and less destabilizing.

However, new nuclear states in an HPW may feel less compelled to adhere to what they may perceive as externally imposed “rules,” bringing them into conflict with major powers seeking to define a set of “rules of the road.” Weak states may prevail in such conflicts, however, if the stakes matter more to them. For states seeking to enforce norms, as such, it becomes imperative for them to maintain a significant superiority in state power relative to those states it wishes to follow these norms. In an HPW, naturally, attaining this level of superiority would be more difficult.

The study elaborated five such rules for an HPW:

- *The credibility of deterrence depends on the perceived will to employ nuclear weapons.* No deterrent, nuclear or otherwise, can be effective without some level of perceived will to execute what one threatens. In an HPW, the stakes of nuclear threats will almost certainly increase, so it becomes all the more urgent that they be believed. “Usually,” noted Herman Kahn, “the most convincing way to look willing is to be willing.”<sup>1</sup>
- *The nuclear threshold will continue to be recognized and remain significant, even when crossed.* The renewed salience of nuclear readiness in an HPW will not render the nuclear threshold obsolete. Even if nuclear employment begins to occur more frequently, it would never become ordinary rather than extraordinary. Restraint and the respect for the nuclear threshold will not come from norms of nonuse, if such norms truly have power today, but rather from the mutual interest in controlling escalation and in terminating or limiting a nuclear war should it begin.
- *Extended deterrence will be more limited, and guarantees will be more selective.* In this new world, the United States may continue to extend nuclear deterrence, but the price will be higher. Countries currently under the U.S. extended deterrence umbrella may no longer be formal U.S. allies, and instead coerced into spheres of influence of major nuclear powers such as Russia and China. The re-extension of deterrence relationships to other countries would be done with considerably more caution, and more may be asked for in return.
- *Actions speak louder than words, but words matter to avoid misperception.* The possibility of increased miscommunication and misperception means that nations cannot leave it to chance or hope that their actions will be interpreted how they intended them. The flushing of submarines or the alerting of bombers might go unnoticed, or alternatively be perceived differently than intended, especially with widely varying intelligence capabilities and the continual suspicion of disinformation. Such actions may require explanations to accompany announcements.

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<sup>1</sup> Herman Khan, *On Thermonuclear War* (Princeton, NJ: Princeton University Press, 1960), 287.

- *An imperative to limit national objectives and respond proportionately.* Keeping conflicts nonnuclear will require the propagation of norms or expectations that nations should limit their objectives, and in the event of escalation should be prepared to detect and curb it, even at considerable cost. As with the other prescriptive rules, however, the inherent instability and anarchic character of an HPW would make this imperative difficult to effect. A highly proliferated world can be a messy world.

## Impact of an HPW on Key Deterrence Concepts

A world of 15 nuclear powers would have implications for key concepts of deterrence, extended deterrence, and strategic stability. While at some level the concepts remain fundamentally the same, their application to significantly changed circumstances would yield different results than sometimes accepted today.

### *Deterrence*

The effectiveness of a deterrence strategy in an HPW would continue to rest on fundamental questions of what we are trying to deter, from whom, against whom, and with what means. Deterrence, to be sure, depends upon very many factors, including capability and will. In an HPW where more nuclear states are more anxious about regional threats, the importance and urgency of such credibility will be of increased importance. Such credibility will likely hinge on a credible, and perhaps demonstrable, commitment to nuclear operations, which would likely be recognized as the core of an effective nuclear deterrent. Perhaps this has always been the case, but it would be salient and obvious in an HPW.

### *Alliances and Extended Deterrence*

Alliances will not completely disappear in an HPW, but will in most cases differ from the extended deterrence relationships that currently exist. Real assurance, to the extent it exists, will depend on effective and demonstrated deterrence. The degree to which extended deterrence has failed, or the degree to which states can be assured, will differ across regions and within regions throughout the hierarchy of nuclear powers. In some cases, alliance relationships may be based more on security cooperation and technology transfers, even in the nuclear realm. This may challenge current U.S. nonproliferation policies.

### *Strategic Stability*

In an HPW, strategic stability might be defined as the absence of a nuclear exchange or of circumstances that might escalate to one. Strategic stability could mean something new in a world where global stability depends upon the sum of regional stability. Within the taxonomy of the HPW, regional nuclear powers may maintain their own region-specific nuclear thresholds, which may differ across the taxonomy of nuclear and nonnuclear powers. Different types of signaling with nuclear weapons, for instance flushing out nuclear submarines or dispersing mobile missiles, may be perceived as crossing a threshold in one region or “nuclear community,” but not another. The major nuclear powers or “policemen” may have to be especially attentive to these regional idiosyncrasies.

## Implications for the United States

The impact of an HPW on key deterrence concepts also contributes to several insights into how such a world might affect the United States. These insights include implications for America's overall national security posture and global presence, for U.S. foreign policy, for allied relationships, for nuclear strategy, policy, and posture, for deterrence and assurance requirements, and perhaps most fundamentally, for American attitudes toward nuclear weapons.

### *America's Role in a Highly Proliferated World*

How the United States perceives its role is arguably at the core of its strategic communications, its military force posture, and its interactions with other nations. As an HPW emerged, the United States would face a choice between continuing and formalizing the de facto policy of disengagement that helped make an HPW possible or, conversely, attempt (perhaps too late) to reassert itself as the primary guarantor of global security and stability.

### *Policy Credibility and Clarity*

This study has identified several theoretical factors that could lend stability to an HPW. These include a mutual recognition, especially between and among major and minor nuclear powers, of asymmetric interests within their respective regions. This mutual recognition would be improved by greater attention to consistency and predictability in power projection behavior, with clear strategic messaging reinforced by action, and the need for states to keep their objectives limited and clearly identified.

These factors are clearly at odds with some features of current American foreign policy, including the principled refusal to recognize spheres of influence, expansive and vague definitions of U.S. security goals and objectives, an overreliance on ambiguity, and vacillation between interventionist and noninterventionist tendencies. Creating stability in an HPW may require the United States to modify some of these habits, policies, and power relations, and in particular improve the clarity and specificity with which the United States identifies and protects its core national security interests.

### *Nonproliferation and Counterproliferation*

After having backed away from more-comprehensive alliance relationships, the United States might fundamentally reverse its position on nonproliferation and counterproliferation. Instead of retaining a categorical opposition to proliferation, the United States and other nations could instead actively aid the nuclear capabilities of other friendly major and weak nuclear powers, in the interest of regional security. Whereas nonproliferation is currently listed in the 2010 *Nuclear Posture Review* as a top priority of the U.S. nuclear agenda, deterrence would again take primacy.

## *Nuclear Force Strategy and Posture*

Another key implication of an HPW for the United States concerns adjustments to its nuclear strategy, policy, and posture, as well as to the associated concepts of arms control and norm creation. At the root of each of these modifications is the requirement that the United States “get real” about nuclear weapons. In particular, this means shedding the current aversion to thinking about the unthinkable—that is, nuclear employment. In particular, this would require increased salience of the nuclear mission and a reinvigoration of attention to military readiness for actual nuclear operations.

A real or perceived lack of nuclear readiness would signal to friends and foes alike that a nation’s leadership does not really believe their weapons would ever be employed. No one wants to go to war with unprepared forces, so being unprepared suggests that you do not think you will have to go to war. Believing nuclear war is “unthinkable” or saying that preparations for “nuclear warfighting” are dangerous adds to that impression.

In addition to these future implications, a concrete implication for today is that the United States should begin to evaluate whether current trends leading to doubts about extended deterrence could be corrected, as well as making an honest assessment about continuing to have the stated pursuit of a robust strategy of global engagement. What is the United States doing today that would encourage its allies and partners to doubt its role as global security provider? What is the United States doing or failing to do that might contribute to reduced assurance and confidence in the U.S. extended deterrence guarantee? Such a candid assessment could potentially preclude or delay the emergence of an HPW.

## Areas for Further Study

Thought experiments like this are designed to stimulate the imagination, to avoid strategic surprise, and to tease out perhaps unexpected questions. This study hardly answered all the questions it raised, however, and significant opportunities for further research present themselves, including:

- An update to the 30-year-old Brookings Institution study, titled *Managing Nuclear Operations* (1987), edited by Ashton Carter.<sup>2</sup> Such an update, notionally titled *Managing Nuclear Operations in the Second Nuclear Age*, would use open-source unclassified materials to both assess and recreate the knowledge base about nuclear operations and concepts.
- An exploration of potential new alliance structures and nuclear sharing or nuclear cooperation arrangements that might emerge to fill the gap in the U.S. extended deterrence umbrella.

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<sup>2</sup> Ashton B. Carter, John D. Steinbruner, and Charles A. Zraket, eds., *Managing Nuclear Operations* (Washington, DC: Brookings Institution, 1987).

- A more extensive analysis for U.S. nuclear force posture and capabilities in an HPW, including an examination of new options for deterrent action and nuclear signaling.
- A study on the effects of a dramatic shift in U.S. nonproliferation policy. What does the world look like in which the United States not only tolerates, but potentially encourages, the proliferation of nuclear weapons to those it currently counts as allies and partners?
- U.S. options for responding to ambiguous nuclear employment such as electromagnetic pulse or nuclear demonstrations.
- Additional tabletop exercises could be conducted on a wider range of scenarios pertaining to an HPW. These might include additional nuclear actors, including in Europe, and to further tease out the prospects of instability, escalation, and strategic ambiguity.



# Introduction

For decades, the United States has led the effort to stem the spread of nuclear weapons, both among potential adversaries and even among its allies and partners. The present state of extended deterrence and of the nonproliferation regime, however, is open to many doubts. What happens if the nonproliferation regime should break down altogether? What happens if extended deterrence should fail, and allies no longer believe in the credibility of the U.S. nuclear umbrella? What happens when the world has not nine nuclear powers, but instead 11, 15, 18, or even more? Much ink has been spilled identifying the most likely candidates for proliferation cascade, and still more has been devoted to how to stem or avoid such proliferation. Significantly less attention has been given to how such a world might function, what it would mean for our present conceptions of deterrence and extended deterrence, what it would mean for the place of the United States in the international order, and for international order itself.

With North Korea's accession, today's "nuclear club" now includes nine nations—the United States, Russia, China, the United Kingdom, France, Israel, India, Pakistan, and North Korea. Although the recently concluded Iranian nuclear deal may delay or mask Iran's long-term efforts to become the tenth member, the debate fueled by recent acts of nuclear proliferation has renewed concern about a future cascade. Should proliferation continue, regional and global dynamics could make deterrence increasingly difficult and nuclear employment more likely, challenging not only nuclear norms but also the framework of international society.

Andrew Marshall once wrote that "any realistic strategy must take account of the possibility that these efforts [to prevent nuclear proliferation] will fail and that the future world will have many more nuclear powers, some of whom would employ weapons in ways very different from how we have tended to focus on."<sup>1</sup> Paul Bracken has likewise observed that "few people have thought about how atomic weapons reshape the strategic rivalries in the world's most contested regions, or at the global level. Even less thought has been given to managing these conflicts in a nuclear context."<sup>2</sup> With these insights, and in the spirit of Herman Kahn's admonition to think about the unpleasant, the impolite, and even the unthinkable, we began to consider how a much more highly proliferated world might realistically function in a postulated future in the 2030s timeframe.

As expressed in the statement of work, the purpose of this study is "to explore how nuclear deterrence (and its many related concepts) would function in a complex, unstable [highly

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<sup>1</sup> Andrew W. Marshall, "Strategy as a Profession in the Future Security Environment," in *Nuclear Heuristics: Selected Writings of Albert and Roberta Wohlstetter*, ed. Robert Zarate and Henry Sokolski (Carlisle, PA: Strategic Studies Institute, 2009), 635.

<sup>2</sup> Paul J. Bracken, *The Second Nuclear Age: Strategy, Danger, and the New Power Politics* (New York: Henry Holt, 2012), 2.

proliferated] world.”<sup>3</sup> To be clear, this study does not predict that a highly proliferated world (HPW) will necessarily emerge, but is rather predicated on the assumption that it has emerged in the timeframe of 2030 or beyond. This study will analyze the trends and effects that caused an HPW to come into existence, develop a deductive framework for how it functions and the “rules” that govern the behavior of its member states, conduct two regional proliferation tabletop exercises (TTXs) to “test” the hypothesized HPW, revise our initial assessment of its functioning and rules, and analyze the implications for key security concepts, U.S. nuclear strategy and posture.

The CSIS team’s methodological approach rests heavily on the judgment of subject-matter experts who are deeply versed in the theory and practice of nuclear deterrence. The study team also conducted an eclectic literature review that emphasized both the classics—Thomas Schelling, Herman Kahn, Albert Wohlstetter, Robert Osgood, and others—as well as more recent works by notable scholars and practitioners, such as Keith Payne, Paul Bracken, Stephen Rosen, and Brad Roberts.

As outlined below and detailed in the appendices, CSIS hosted three working group meetings at which the HPW team produced an interim research brief as the basis for discussion. The HPW team also designed and conducted two tabletop exercises to validate and refine its deductive framework for how an HPW might function. In a final effort to seek expert feedback, the HPW team vetted its draft findings and recommendations with several former senior-level officials, both inside and outside CSIS.

The HPW study team followed the four-phase methodological approach outlined in the statement of work:

- Phase 1: “[D]evelop [a] . . . narrative on how a world with 18 nuclear powers evolved and how it is likely to function.”
  - This narrative includes an “assumed future” for 2030 and beyond and a deductive framework for how an HPW evolved and is likely to function. (Chapter 2)
- Phase 2: “[D]efine the ‘rules of the game,’ both normative and prescriptive, for this 2030+ world.”
  - These behavioral norms and “shared” or agreed-to rules are often compared to traffic laws (the term “rules of the road” is often used instead of “rules of the

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<sup>3</sup> The original title for this study project was “Thinking about the Unthinkable in a World of 18 Nuclear Powers.” The initial part of the title, of course, paid homage to Herman Kahn, one of the great nuclear strategists of the Cold War, while the choice of “18 Nuclear Powers” represented a doubling of the size of today’s nuclear club. Although a credible scenario could be built for a future world of 18 nuclear powers, the dynamics of this highly proliferated world (HPW) would likely exist if nuclear proliferation was limited to Northeast Asia, the Middle East, and Europe, and specifically with this study’s postulated number of 15 nuclear powers. It is also possible proliferation could be greater in these three regions, and that it could extend to other regions (such as Africa and Latin America) because of spillover effects stemming from the first wave of proliferation. Since this assumed future of an HPW could range from 15 to 20 or more without substantially affecting its character, the CSIS study team chose the more generic term “highly proliferated world.”

game”), despite the international system being fundamentally anarchic and lacking the governance mechanism that both formulates laws and enforces them. (Chapters 3 and 4)

- Phase 3: “[T]o validate and refine the deductive framework that emerged from Phase 2.”
  - In March 2016, the study team conducted two regional (Northeast Asia and the Middle East) tabletop exercises to explore how an HPW could function. (Chapter 2)
- Phase 4: “[I]ntegrate the Phase 1 and Phase 2 results (also Phase 3 if exercised) [and] then identify the implications for U.S. 2030+ nuclear strategy and posture.” This was done in four steps:
  - Articulate a revised description, with six characteristics of how an HPW might function. (Chapter 3)
  - Articulate five prescriptive “rules of the game” for the stable functioning of an HPW. (Chapter 3)
  - Assess impact of this HPW of 15+ nuclear powers upon key security concepts such as deterrence, extended deterrence and alliances, and strategic stability. (Chapter 4)
  - Assess implications for the United States—its role in the world, policy credibility and clarity, alliance relations and U.S. extended deterrence, U.S. nuclear strategy, policy and posture, and policy attitudes toward nonproliferation and counterproliferation. (Chapter 5)

The structure of this report reflects its phased methodological approach. Iterating draft HPW products, ranging from supporting analysis to the final report, was an extensive and rigorous process, but the result was a report that has endured the competition of ideas.

The authors want to thank all of the HPW participants for engaging in this study effort, as well as the Office of Net Assessment (ONA) in the Office of the Secretary of Defense for funding it. Of course, the coauthors of this report take sole responsibility for its content.

# 01

## The Path to a Highly Proliferated World

### Defining the Assumed Future of 2030+

This study is predicated on the basic assumption that a highly proliferated world (HPW) exists in the 2030 and beyond timeframe. That assumption brings with it reflection on the trends and effects that could cause it to come into existence. Understanding how and why an HPW evolved is critical to understanding how it is likely to function. Given the political, economic, and military centrality of the United States in the post–Cold War era, changes in U.S. strategy, power, and influence could increase the prospects for an HPW. Indeed, if such changes do not transpire, an HPW might not emerge after all.<sup>4</sup> Thus, it would make little sense to assume a 2030+ HPW in which the United States had the same dominant power position and geopolitical role as it did during the post–Cold War era.

The following represents an analysis of trends and events driving the evolution of an HPW, a taxonomy of actors, the regional dynamics contributing to its evolution and affecting its existence, postulated force structures of the six new nuclear actors, and finally a list of initial hypotheses representing a deductive framework for how an HPW would function.

These hypotheses were tested in several working group discussions and against the results of two tabletop exercises detailed in Chapter 3. Chapter 4 represents a critical analysis describing how an HPW might be expected to function, and prescriptive “rules of the game” or norms for how nations might interact while preserving strategic stability and avoiding catastrophe. Chapter 5 elaborates the effect an HPW would have upon key deterrence concepts, and implications for the United States in particular.

### Trends and Events Driving the Evolution of a Highly Proliferated World

The path to an HPW is well worn, at least in theory. For decades, nuclear scholars have postulated scenarios for widespread proliferation, and predictions of a proliferation cascade to a dozen or more nuclear powers is nothing new. Alastair Buchan in 1966 wrote that while “the biggest gap in the chain reaction of proliferation may be from the fifth to the sixth

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<sup>4</sup> In his recent book, Brad Roberts, a leading scholar and one of the principal architects of U.S. nuclear policy during the first Obama administration, argues strongly in support of the current U.S. “balanced approach” to deterrence, assurance, and strategic stability, which assumes “that that there will be no changes to American national security strategy at a higher level.” These policies sought, among other things, to prevent a “cascade” of nuclear proliferation. The 2030+ assumed future upon which this study is predicated assumes that U.S. strategy, policy, and power failed to prevent significant nuclear proliferation, a “future fact” that has important consequences for U.S. strategy and power in a 2030+ HPW. Brad Roberts, *The Case for U.S. Nuclear Weapons in the 21st Century* (Stanford, CA: Stanford University Press, 2015), 255.

nuclear power . . . [f]rom the sixth to the sixteenth the progression might be rapid.”<sup>5</sup> Kenneth Waltz predicted in 1995 that “someday the world will be populated by fifteen or eighteen nuclear-weapon states.”<sup>6</sup> In 2004, Mitchell Reiss warned that “we may very soon be approaching a nuclear ‘tipping point,’ where many countries may decide to acquire a nuclear arsenal on short notice . . . triggering a proliferation epidemic.”<sup>7</sup>

Perceptions of which countries are considered the most likely to cross the nuclear threshold have also changed only marginally over the decades. In most cases, countries only fall off the “list” of usual suspects when they acquire nuclear weapons (India, Israel), cease to exist (West Germany, Yugoslavia), or fall into disarray (Syria). Some notable exceptions include Libya, South Africa, and Sweden. The five countries that have acquired nuclear weapons since 1962 fit well into Wohlstetter’s 1977 assessment that the countries most likely to go nuclear are “the non-aligned and marginally aligned countries and those that feel threatened and fear abandonment.”<sup>8</sup>

Many factors enter into a nation’s calculus about whether to seek nuclear weapons, ranging from security to national prestige.<sup>9</sup> In the transition from today’s world of nine known nuclear powers to our postulated HPW of 15+ nuclear powers, we assess that the following five factors would be especially important: dominant U.S. conventional power; the erosion of U.S. extended deterrence; threats from nuclear adversaries; the growing availability of technology; and potential nuclear employment prior to 2030.

- *U.S. conventional superiority and activist national security strategy.* Deterring U.S. intervention will be a prime motive for some new members of the club. When asked about lessons learned from the first Persian Gulf War, the Indian army chief of staff said, “the lesson of Desert Storm is, don’t mess with the United States without nuclear weapons.”<sup>10</sup> The fates of Saddam Hussein and Muammar el-Qaddafi have been more recently cited, including by North Korea, as vivid examples of what happens to rogue state leaders who do not have nuclear weapons.<sup>11</sup> A similar desire to counteract conventional superiority might be seen with Pakistan’s decision to go nuclear.
- *Erosion of U.S. extended deterrence.* The potential loss of credibility of the U.S. “nuclear umbrella” reflects both increased regional threats, particularly by new nuclear-armed

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<sup>5</sup> Alastair Buchan, “Introduction,” in *A World of Nuclear Powers?*, ed. Alastair Buchan (New York: Columbia University Press, 1966), 9.

<sup>6</sup> Scott Douglas Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: An Enduring Debate*, 3rd ed. (New York: W.W. Norton & Co., 2012), 4.

<sup>7</sup> Mitchell B. Reiss, “The Nuclear Tipping Point: Prospects for a World of Many Nuclear Weapons States,” in *The Nuclear Tipping Point: Why States Reconsider their Nuclear Choices*, ed. Kurt M. Campbell, Robert J. Einhorn, and Mitchell B. Reiss (Washington, DC: Brookings Institution, 2004), 4.

<sup>8</sup> Albert Wohlstetter et al., *Moving toward Life in a Nuclear Armed Crowd?: Final Report* (Los Angeles, CA: Pan Heuristics, 1976), 155.

<sup>9</sup> Kurt M. Campbell, “Reconsidering a Nuclear Future: Why Countries Might Cross over to the Other Side,” in *The Nuclear Tipping Point: Why States Reconsider Their Nuclear Choices*, ed. Kurt M. Campbell, Robert J. Einhorn, and Mitchell B. Reiss (Washington, DC: Brookings Institution, 2004), 18–31.

<sup>10</sup> Brad Roberts, *The Case for U.S. Nuclear Weapons in the 21st Century*, 52.

<sup>11</sup> Agence France-Presse, “North Korea Cites Muammar Gaddafi’s ‘destruction’ in Nuclear Test Defence,” *The Telegraph*, January 9, 2016, <http://www.telegraph.co.uk/news/worldnews/asia/northkorea/12090658/North-Korea-cites-Muammar-Gaddafis-destruction-in-nuclear-test-defence.html>.

states (like North Korea) and near-nuclear powers (like Iran), and the growing reality and perception of American decline in relative power and retrenchment in terms of grand strategy. Countries capable of achieving nuclear status will constantly assess their dependence on U.S. nuclear guarantees and “consider their options.” For example, after North Korea’s February 2013 nuclear test, a little less than half of the South Korean public believed that the United States would retaliate in kind to a North Korean nuclear attack on South Korea, while two-thirds of the public supported a domestic nuclear weapons program.<sup>12</sup> The self-assurance, autonomy, and sovereignty of having one’s own nuclear deterrent was a powerful driver in previous proliferation—as with the United Kingdom, France, and Israel—and will be in future proliferation.

Other trends of domestic origin, such as tightened pressure on defense spending and exhaustion after almost a century of “global policing,” may also contribute to a conscious decision by the United States to pull back on commitments abroad. This drawback could include U.S. forces in South Korea, rationalized on the belief that South Korean conventional forces are now more than capable of thwarting a North Korean attack. By 2021, the United States will be spending more to service the national debt than on defense spending, and taking care of its aging population will continue to strain the budget.<sup>13</sup> With domestic and fiscal pressures mounting, the United States may find itself with little choice than to reduce or rescind its role as underwriter of global security.

Should such trends come to fruition, they would encourage security vacuums, particularly in regions and countries facing potent threats and that have become dependent on the United States. Countries such as Japan, South Korea, Saudi Arabia, Turkey, and even Poland could see nuclear weapons as a relatively quick and efficient means of filling those vacuums.

- *Threats from nuclear-armed adversaries.* Nuclear weapons are not just an offset to an adversary’s conventional superiority; they also counter an adversary’s nuclear, chemical, or biological weapons. When facing existential threats, nations that are determined and capable of getting nuclear weapons will get them. French President Hollande was particularly eloquent in early 2015 when he thanked members of the “deterrence force”:

What you do, what the deterrence force makes possible, is ensure that the nation, France, your country, keeps what is dearest and precious and essential to it, its independence. And there is no independence without the freedom to choose her destiny. The deterrence force is what permits us to be able to live free without fear or apprehension, because we are sure of our capacity to defend ourselves.<sup>14</sup>

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<sup>12</sup> Jiyoung Kim, Karl Friedhoff, and Chungku Kang, “Fallout: South Korean Public Opinion Following North Korea’s Third Nuclear Test,” Asan Institute for Policy Studies: Issue Brief, no. 46 (February 13, 2013), 7, 9.

<sup>13</sup> Josh Zumbrun, “The Legacy of Debt: Interest Costs Poised to Surpass Defense and Nondefense Discretionary Spending,” *Wall Street Journal*, February 3, 2015, <http://blogs.wsj.com/economics/2015/02/03/the-legacy-of-debt-interest-costs-poised-to-surpass-defense-and-nondefense-discretionary-spending/>.

<sup>14</sup> François Hollande, “Speech on Nuclear Deterrence, 19 February 2015” (speech, Istres-Le Tubé Air Base, Istres, France, February 19, 2015), <http://www.acdn.net/spip/spip.php?article921&lang=en>.

Many of the countries dependent on U.S. assurances, such as Saudi Arabia and Japan, may suffer from a domestic perception of decline relative to the rising strength of their regional adversaries. The phenomenon of “regime pessimism” may help drive states toward nuclear acquisition.<sup>15</sup> States in decline, Kurt Campbell remarks, “may well consider the nuclear option as a relatively cost effective and technically achievable equalizer that could prevent the nation from sinking into oblivion or being tested by rising regional rivals.”<sup>16</sup>

- *Growing availability of relevant technology and knowledge.* Although it has proven more difficult for nonstate actors (such as al-Qaeda) to acquire nuclear weapons than many had predicted, North Korea demonstrates what a determined nation-state can accomplish, despite the lack of resources, economic development, and a generous patron.<sup>17</sup> The drive across four successive U.S. administrations to improve nuclear material security has made it harder for nations to go nuclear, but far from impossible.
- *Nuclear employment.* The study coleads were divided on whether a breach of the tradition of nuclear nonuse, often characterized as the “nuclear taboo,” was a likely prerequisite for the evolution of an HPW. While Murdock believes that nuclear employment was more likely, if only because the likelihood of nuclear employment increases as the number of nuclear powers increases, both coleads agreed that a 2030+ HPW could occur *without* a nuclear weapon being employed. The actual detonation of a nuclear weapon is not a necessary precondition for accelerating nuclear proliferation. Nevertheless, the breaking of the nuclear taboo could hasten and expand it. For instance, a nuclear-armed regional power could employ nuclear weapons to prevent its regional adversary from going nuclear, as the United States and the Soviet Union considered doing with China, and as the United States worried about with Iraq. Alternatively, the ugly specter of nuclear employment could have the opposite effect, reinforcing the nuclear taboo and chilling nuclear armament. The dynamics of future counterproliferation efforts by regional powers may not be violent. Russia or China, for instance, could well take dramatic action to preclude the emergence of a nuclear-armed Poland or Japan, respectively.

These five factors need not all apply in the calculus of any given nation state, but their existence would likely weigh upon them and significantly shape the emergence of an HPW.

## Taxonomy of Actors

In our postulated world, nuclear weapons remain a principal source of leverage in the international system. With respect to both conducting nuclear attacks and defending against

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<sup>15</sup> Campbell et al., *The Nuclear Tipping Point: Why States Reconsider Their Nuclear Choices*, 26.

<sup>16</sup> *Ibid.*, 27.

<sup>17</sup> Herman Kahn, *Thinking about the Unthinkable* (New York: Horizon Press, 1962), 220–21.

them, a nation's nuclear capability defines its position in the power structure of the 2030+ HPW.<sup>18</sup> This study posits a taxonomy of five categories:<sup>19</sup>

- *Major nuclear powers* have large, highly survivable, and diversified arsenals and are capable of defending against small, unsophisticated nuclear attacks. They can conduct devastating nuclear attacks against any combination of nuclear powers and can successfully defend against attacks from weak nuclear powers.
  - In 2030+, this includes the United States, Russia, and China, although other states could achieve this capability against regional nuclear-armed adversaries.
- *Minor nuclear powers* have sufficient survivable nuclear forces to withstand attacks from major nuclear powers and still inflict "unacceptable damage" in retaliation.
  - This "assured retaliation" capability is currently possessed by the U.K., France, and Israel (which currently has no nuclear-armed regional adversary). India currently has this status with respect to China and Pakistan. Pakistan may have an assured retaliation relationship with India, but many doubt its ability to withstand threats to its sovereignty.
  - The demand for sea-based nuclear weapons seems likely to continue, because such distribution and survivability of retaliatory capability contributes to independence and territorial integrity. Not all nuclear powers will choose or be able to afford this capability, however, and the invulnerability of underwater vessels may degrade over time.<sup>20</sup>
- *Weak nuclear powers* have small, crude arsenals that can inflict horrible damage if unopposed, but can be defended against by major nuclear powers and are at risk of preemption by major and some minor nuclear powers. While their nuclear weapons cast a "nuclear shadow" over any conflicts involving them, they are also a source of crisis instability because a first strike could disable or negate them.
  - Currently, North Korea is the only weak nuclear power, but these numbers will be larger in 2030+ since it takes time for new nuclear powers to build an assured retaliation capability.
- *Nonnuclear states*, by definition, do not have nuclear weapons because they lack either the capability or will to pursue nuclear status. Those facing nuclear-armed adversaries could face a critical strategic choice: seek an alliance with a major nuclear power or

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<sup>18</sup> Although some believe that war in the cyber domain could be as highly destructive as nuclear war and thus raise the same kind of existential stakes for the parties involved, this perception will not be widely shared until the cyber equivalent of Hiroshima. In the meantime, nuclear weapons and their proliferation are stipulated here as a special capability that would define the HPW.

<sup>19</sup> Basic nuclear and conventional force structures were posited for the various countries involved in the tabletop exercises (Appendix 2B).

<sup>20</sup> Austin Long and Brendan Rittenhouse Green, "Stalking the Secure Second Strike: Intelligence, Counterforce, and Nuclear Strategy," *Journal of Strategic Studies* 38, no. 1–2 (2015).

accept the necessity of accommodating a nuclear-armed adversary (“Finlandization”). This category would also include latent or threshold states, like Japan today.

- *Nonstate actors*, ranging from criminal organizations and radical religious cults to empowered individuals, pose security challenges to nation-states and contribute significantly to the level of disorder (particularly in ungoverned areas) in the system. However, they are not principal determinants of the nature of the international system unless they evolve into a state (as is the case today with ISIS) or seize control of a state.

**Table 1-1: Taxonomy of Assumed 2030+ HPW**

<i>Major Nuclear Powers</i>	<i>Minor Nuclear Powers</i>	<i>Weak Nuclear Powers</i>
China	France	Poland
Russia	India	Saudi Arabia
United States	Iran	Turkey
	Israel	
	Japan	
	Pakistan	
	South Korea	
	North Korea	
	United Kingdom	

## Paths to a Highly Proliferated World: Regional Dynamics

Although this study assumes that an HPW will exist in the 2030+ timeframe, the debate over how many states might “go nuclear” was contentious within the CSIS study team, among working group meeting participants, and with external subject-matter experts. Many experts had their favorite candidates for nuclear breakout, and there was little agreement on whether the assumed proliferation “cascade” would stabilize at 11 (with the addition of Iran and Saudi Arabia), at 13 (with Japan and South Korea joining the nuclear club), at 15 (as proliferation spreads to Europe), or more (with greater proliferation in the Middle East and Northeast Asia and new nuclear powers in additional regions).

In general, however, most agreed with the following study group assumptions: (1) the number of major nuclear powers would not extend beyond the United States, Russia, and China; (2) the “next wave” of nuclear proliferation would be driven by regional security dynamics; and (3) the pace and extent of regional proliferation, *if* it occurred as this study assumes, would be fueled by the loss of credibility of American extended deterrence—the so-called “nuclear umbrella” provided by the United States to its nonnuclear allies and friends.

The assumption that regional dynamics would be a primary cause of an HPW has frequently been predicted. In *The Second Nuclear Age*, Paul Bracken argues convincingly that the “second nuclear age” will differ significantly from the “first nuclear age” when the nuclear era coincided with the Cold War competition between the United States and the Soviet Union.

This newly proliferated world, according to Bracken, would be much more unstable and dangerous as regional rivalries fueled by nationalism and sectarianism now unfold “in a nuclear context.”<sup>21</sup>

The base case for the 2030+ assumed future is 15 nuclear powers—the current nine, plus Iran, Saudi Arabia, Turkey, South Korea, Japan, and Poland (see Table 1-1). As will be discussed shortly, an HPW could contain significantly more, or as few as 12 (e.g., Iran, Saudi Arabia, and South Korea). The CSIS study leads concluded that nuclear proliferation in at least two regions would constitute an HPW, and that growth beyond 15 would likely further complicate, but not significantly change, the new nuclear context in which the major nuclear powers would operate.

The CSIS team thought it unlikely that the 2030+ HPW would include only three new members of the nuclear club because each new entrant could trigger additional proliferation. Iran “going nuclear,” for example, would probably lead Saudi Arabia to follow suit, which in turn incentivizes Turkey and the United Arab Emirates. The base case for a 2030+ HPW includes proliferation in three regions—the Middle East, Northeast Asia, and Europe—while recognizing that proliferation could be more extensive and could well involve other regions (e.g., Southeast Asia, Latin America, and Africa). Our survey, by no means exhaustive, of regional proliferation dynamics and regional pathways to a more highly proliferated world is as follows:

*Middle East:* Even if implemented as hoped, the Iranian nuclear deal will likely position Iran in the mid-2020s as an industrial-strength threshold nuclear power with a robust breakout capability.<sup>22</sup>

Proliferation in the Middle East began in the 1960s with Israel's undeclared but widely recognized entrance into the nuclear club. The regional tipping point, however, would be Iran going nuclear, since the Saudi kingdom, which some believe already has a “bomb in the basement,” would likely acquire or unveil its counter to Iran’s “Shia bomb.” Turkey, which has strategic equities in both the Middle East and Europe, could find intolerable the prospect of a “nuclear Middle East” that did not include them.

Other candidates that were considered, but excluded from our assumed future include Egypt, seeking to regain its lost status as the most powerful Arab country, and the United Arab Emirates, in pursuit of a non-Saudi “Sunni bomb.”

*Northeast Asia:* Like Pakistan’s willingness to “eat grass” to acquire a nuclear capability, North Korea has likewise acquired its own nuclear weapons, which could well trigger a regional proliferation dynamic. As posited in our assumed future, this dynamic in Northeast Asia engulfs both South Korea and Japan. Besides their respective distrust of North Korea and doubts about U.S. extended deterrence, their historical mutual distrust of one another

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<sup>21</sup> Bracken, *The Second Nuclear Age*, 9.

<sup>22</sup> The proliferation scenario that forms the basis of the study’s second tabletop exercise postulated an Iranian nuclear test in October 2024, which triggered Saudi Arabia’s purchase of a small nuclear arsenal from Pakistan. Turkey in turn withdraws from the Nuclear Non-Proliferation Treaty as it began reprocessing spent fuel rods into plutonium and unveiled a clandestine uranium enrichment plant.

stimulates their going nuclear in tandem. China's assertiveness in the region is likewise posited as increasingly adversarial, as its effort to displace the United States as the regional hegemon raises anxieties about both Chinese intentions and American steadfastness. The proliferation scenario posited for the study's first tabletop exercise envisioned Japan going nuclear in the late 2020s in reaction to continued North Korean provocations and South Korea following suit.

Other candidates include Australia (concerned about its independence and national sovereignty in a Chinese-dominated region), Indonesia (to ensure that its voice is heard in a nuclear Asia), and Taiwan (to avoid Hong Kong's fate), as well as Malaysia and Vietnam.

*Europe:* As Russia continues to maintain an aggressive and provocative posture toward NATO and its other neighbors, the security challenge to European states is similar to that of the early days of the Cold War, but with key structural differences—the United States (in this 2030+ Assumed Future) is strategically retrenching, not engaging, and Germany is still challenged when it comes to the use of force. As the leader of Europe's "front-line states," Poland, like the United Kingdom and France in an earlier time, may opt for nuclear "self-reliance," a decision that the United States might ignore, resist, or secretly support. Already subject to proliferation pressures emanating from the Middle East, Turkey's historic and increasingly bitter rivalry with Russia could lead Turkey to consider the nuclear option.

Another perennial candidate is Germany, a long-standing threshold state with a growing nuclear allergy in the wake of Fukushima. If, as assumed in this study, deteriorating security circumstances cause Japan to rethink its antinuclearism caused by Hiroshima, Nagasaki, and Fukushima, a more menacing Russia could cause Germany to do so as well.

*Elsewhere:* Proliferation in the Middle East, Northeast Asia, and Europe could spark proliferation elsewhere, in part because regional powers in nonnuclear regions want the status and prestige enjoyed by members of the expanding nuclear club. South Africa has kept its stockpile of highly enriched uranium despite repeated entreaties from American administrations. Brazil has likewise exhibited some ambivalence about remaining nonnuclear, and could decide that they too wanted to be part of the "nuclear conversation." Doing so might encourage their respective competitors, such as Nigeria and Argentina, to follow suit.

As the number of nuclear powers increases, the geopolitical leverage conferred by threshold status would likely decline. Nations capable of going nuclear are likely to find reasons of state to do so.

## The Pace of Proliferation and Its Impact

Another feature that emerged from working group discussions is that the *pace* of increased proliferation would influence how well the international system copes with widespread proliferation. Should an HPW emerge more quickly, states might not have time to adapt. If it emerges more slowly, and there might be time for new normative "rules" and power relationships to take hold. In his provocative essay *Why More May Be Better*, Kenneth Waltz assumes that an HPW would be highly stable, but also assumes the pace of horizontal

proliferation will remain roughly steady.<sup>23</sup> In some respect, the modest pace of past proliferation may have been a positive influence for stability, “giving the international community time,” Reiss remarks, “to accommodate and integrate new nuclear powers into the existing order.”<sup>24</sup> While it is difficult to either prove or disprove whether “nuclear mithridatism” has been or would be stabilizing, there is no guarantee that the current pace of one or two per decade will continue with the emergence of an HPW.<sup>25</sup>

Impulses toward proliferation motivated by decayed confidence in external assurances may be quite different than the historical slow march of nonaligned or marginally aligned states going nuclear that the world has experienced since the 1970s. Unlike proliferation motivated primarily by regional threats, incidents that cause an erosion of faith in extended deterrence in one region could easily spread to another. For example, a public rebuke of U.S. assurances and nuclear proliferation among Arabian Gulf states could have spillover effects in East Asia, or vice versa. This transregional effect originating from the erosion of extended deterrence is one reason this study posits a relatively rapid descent to a 2030+ HPW. Conversely, the sudden purchase and revelation of new nuclear status could either provoke a neighboring rival, or be presented with a *fait accompli* it dislikes but chooses to accept.

Indeed, gradual acquisition of new nuclear states might not be better for stability. Indications that a nonnuclear power, say Poland, was beginning a long domestic nuclear program might well invite preventative war or other action by a nuclear state, in this case Russia. The evolution to an HPW could be highly unstable, since nuclear-armed powers could take military action to prevent their regional adversaries from going nuclear.

Countless other relationships between major and minor nuclear actors also matter. For example, it seems unlikely that China would attack South Korea to prevent its joining the nuclear club, in part because this has been a known risk for China, since it enabled North Korea’s debut at the nuclear prom; in contrast, China could preempt such action by Taiwan. More generally, the risk of nuclear conflict likely increases with the number of nuclear powers as less-predictable, perhaps less-deterrable regimes transition from latent to actual nuclear status.<sup>26</sup> Likewise, in his book *On China*, Henry Kissinger predicts that “as proliferation accelerates, the calculus of deterrence grows increasingly abstract. It becomes ever more difficult to decide who is deterring whom and by what calculations.”<sup>27</sup> With a rising number of deterrence relationships, the prospects for misperception and miscalculation multiply considerably.

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<sup>23</sup> Sagan and Waltz, *The Spread of Nuclear Weapons*, 3.

<sup>24</sup> Reiss, “The Nuclear Tipping Point: Prospects for a World of Many Nuclear Weapons States,” 3.

<sup>25</sup> Mithridatism is the practice of taking small doses of poison over a long period of time in hopes of developing immunity.

<sup>26</sup> Henry Sokolski, *Underestimated: Our Not So Peaceful Nuclear Future* (Arlington, VA: Nonproliferation Policy Education Center, 2015).

<sup>27</sup> Henry Kissinger, *On China* (New York: Penguin, 2012), 495.

## Differentiation of Capabilities

Another characteristic of an HPW is the differentiation of nuclear force structure within the taxonomy of nuclear actors.

An HPW would likely comprise a wide range of nuclear postures, capabilities, and doctrines. Such diversity adds yet another layer of complexity to the reliable functioning of nuclear deterrence. As Bracken writes, "It is very doubtful that a single overarching conceptual framework such as deterrence or containment can adequately handle the large variations of strategic personality."<sup>28</sup> Countries with nuclear forces structured for societal retaliation, or "city-busting," for example, may find their nuclear arsenals less effective at deterring conventional conflict. The idiosyncratic strategic goals of new nuclear actors will also play a part, and of course those goals and the consequent force postures could invite misunderstanding. Vipin Narang writes, "If a state wants to deter conventional conflict, it must explicitly array its nuclear posture to do so."<sup>29</sup> The character and significance of posturing would in turn need to be communicated and explained to its neighbors, perhaps quite explicitly, so as to avoid misperception. In this respect, it could represent a significant departure from today's discussions about nuclear policy, which quite often emphasize ambiguity and generality.

Deterrence has never been automatic and, in an HPW, fundamental questions from the early Cold War will recur in a kind of "back to the future" resurgence. The calculus about how much is enough for deterrence and how to avoid a disarming first strike, for instance, will be foremost among any new nuclear power and states must therefore be quite attentive to the structure, posture, and readiness levels of their nuclear force. Weak nuclear powers with underdeveloped and vulnerable arsenals would face the risk of preemption or preventative attack by major or minor nuclear powers. The temptation to preempt a nuclear adversary may be just as great to a leader who perceives his own arsenal as being vulnerable as well. As Kahn wrote in 1962, "A world in which 'reciprocal fear of surprise attack' (or surprise ultimatum) is ever present is also a world in which there would be little stability."<sup>30</sup>

Nuclear states within the HPW would likely have varying force postures, constrained by fiscal and economic capacity, technological capability, paths to nuclear acquisition, threat perceptions, and culture. The greatest degrees of variation might be found between the taxonomical groups described above (major, minor, and weak), but variation would likely be seen even within those groups.<sup>31</sup> Several variables factor into such postures of our assumed HPW:

- *Resource variances.* Putting forward the kind of sophisticated strategic forces that Herman Kahn describes as necessary for robust deterrence—such as variable-yield,

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<sup>28</sup> Bracken, *The Second Nuclear Age*, 109.

<sup>29</sup> Vipin Narang, *Nuclear Strategy in the Modern Era: Regional Powers and International Conflict* (Princeton, NJ: Princeton University Press, 2014), 225.

<sup>30</sup> Kahn, *Thinking about the Unthinkable*, 224.

<sup>31</sup> A present-day example of this variation can be seen between India and Pakistan, with India maintaining what it describes as a minimum deterrent tailored to societal targeting, and Pakistan moving toward capabilities and doctrines tailored to limited nuclear employment on the battlefield.

precision-strike weapons, air and missile defenses, and civil defense—is likely out of reach for many, even for simple economic reasons. Many other issues, ranging from variations in understanding of deterrence requirements from country to country, strategic culture, to the relationship between civil and military authorities may influence nuclear force postures. Narang likewise observes that “unlike the superpowers, which both developed massive nuclear architectures capable of everything from tactical first use, to counterforce strikes to assured destruction, the regional powers have had to make choices about how and where to allocate their deterrent power.”<sup>32</sup>

- *Technological capability.* The technological prowess of a proliferating nation would also be a key determinant in the sophistication of its nuclear arsenal. Such capabilities would influence not merely the size or yields of a state’s nuclear devices but also the precision, survivability, stealth, and diversity of its delivery platforms, as well as the professionalization and capacity for a high degree of military readiness. A state’s technological capability to support a nuclear force is of course linked to the strength of its economy, its educational system, and its global connectivity. Lower-tech states backed by other nuclear powers willing to share or collaborate on nuclear weapons technology would add yet another layer of complexity and uncertainty.
- *Paths to acquisition.* The course a country charts would impact its force structure. Should a country such as Saudi Arabia rely on purchasing nuclear weapons from other states, it will have less ability to structure its forces in a way that would maximize its deterrent effect because of the limited availability of “off-the-shelf nukes.” Other types of proliferation may occur, such as nuclear sharing agreements, further complicating the deterrence calculus.
- *Threat perceptions.* The kinds of threats a country perceives would also impact its force structure. Kaparanov argues that “judgments on the future of nuclear weapons cannot be correct unless they are made with an understanding of what the policy imperatives will be for a given country and, consequently, of what the country itself will be.”<sup>33</sup> One sees this clearly at work in Pakistan, whose decision to pursue short-range tactical nuclear weapons is a clear response to India’s conventional superiority.
- *Strategic culture.*<sup>34</sup> Other less tangible factors also shape new nuclear forces, including how a country perceives its role in the world, its military history, its civil-military relations, and its historical emphasis on land, sea, or air forces. India’s doctrine of minimum deterrence, for example, may be motivated as much by a desire to be

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<sup>32</sup> Narang, *Nuclear Strategy in the Modern Era: Regional Powers and International Conflict*, 14.

<sup>33</sup> Nikolai Kaparanov, “A Russian Perspective on the Future of Nuclear Weapons,” in *Nuclear Weapons in the Changing World: Perspectives from Europe, Asia and North America*, ed. Patrick J. Garrity and Steven A. Maaranen (New York: Kluwer Academic, 1992).

<sup>34</sup> Strategic culture has been defined as the “set of shared beliefs, assumptions, and modes of behavior, derived from common experiences and accepted narratives (both oral and written), that shape collective identity and relationships to other groups, and which determine appropriate ends and means for achieving security objectives.” Jeffrey A. Larsen, Jeannie L. Johnson, and Kerry M. Kartchner, *Strategic Culture and Weapons of Mass Destruction: Culturally Based Insights into Comparative National Security Policymaking* (New York: Palgrave Macmillan, 2009), 8.

perceived as a “responsible” nuclear power as by consideration of what is necessary to deter Chinese or Pakistani aggression. India’s desire to retain firm civilian control of nuclear weapons is likely also a factor, but this may be less of a priority for others.

Table 1-2 presents a postulated but plausible description of the kind of diversity in motivations, goals, and nuclear force structures that one could expect to see in an HPW.

Table 1-2: Hypothetical Nuclear Force Structures of New 2030+ Nuclear Powers				
Country	Drivers	Goals	Paths to Acquisition	Force Posture
Iran	<ul style="list-style-type: none"> <li>Regional competition</li> <li>Deter regime change</li> <li>Prestige</li> </ul>	<ul style="list-style-type: none"> <li>Deter invasion</li> <li>Regional escalation dominance</li> <li>Regime legitimacy</li> </ul>	<ul style="list-style-type: none"> <li>Domestic program</li> <li>North Korean assistance</li> </ul>	<ul style="list-style-type: none"> <li>Potential for the largest arsenal in the region. High distribution and survivability of delivery systems could give credible second strike.</li> </ul>
Saudi Arabia	<ul style="list-style-type: none"> <li>Iran goes nuclear / Shia-Sunni rivalry</li> <li>Loss of faith in U.S. extended deterrence</li> </ul>	<ul style="list-style-type: none"> <li>Counter Iranian nuclear capabilities</li> <li>Make up for inferior conventional forces</li> </ul>	<ul style="list-style-type: none"> <li>Purchase nuclear capabilities from Pakistan</li> <li>Develop domestic program</li> </ul>	<ul style="list-style-type: none"> <li>If purchasing weapons from Pakistan, Saudi Arabia's force posture could include battlefield nuclear weapons as well as short- and medium-range artillery and missiles.</li> </ul>
Turkey	<ul style="list-style-type: none"> <li>Loss of faith in U.S. extended deterrence</li> <li>Iran goes nuclear</li> <li>Unchecked Russian aggression</li> </ul>	<ul style="list-style-type: none"> <li>Negate Iranian nuclear advantage</li> <li>Maintain territorial integrity</li> </ul>	<ul style="list-style-type: none"> <li>Purchase</li> <li>Nuclear sharing with U.S. or other NATO member</li> <li>Militarize civil nuclear program</li> </ul>	<ul style="list-style-type: none"> <li>Asymmetric escalation or catalytic type posture similar to current NATO nuclear deployment in Turkey. Nuclear weapons could be delivered by F-16s or future F-35s, or mated to ballistic missiles.</li> </ul>
Poland	<ul style="list-style-type: none"> <li>Loss of faith in U.S. extended deterrence</li> <li>Loss of faith in NATO</li> <li>Russian aggression</li> </ul>	<ul style="list-style-type: none"> <li>Deter Russian aggression</li> </ul>	<ul style="list-style-type: none"> <li>Purchase</li> <li>Nuclear sharing with U.S. or other NATO member</li> <li>Militarize civil nuclear program</li> </ul>	<ul style="list-style-type: none"> <li>Asymmetric escalation or catalytic type posture. Would acquire F-35 fighter aircraft in addition to its F-16s capable of carrying tactical nuclear weapons.</li> </ul>

Japan	<ul style="list-style-type: none"> <li>• Loss of faith in U.S. extended deterrence</li> <li>• North Korean aggression</li> <li>• Chinese aggression</li> <li>• South Korea goes nuclear</li> </ul>	<ul style="list-style-type: none"> <li>• Deter North Korean nuclear employment or threats</li> <li>• Block Chinese hegemony in East Asia</li> </ul>	<ul style="list-style-type: none"> <li>• Militarize civil nuclear program</li> </ul>	<ul style="list-style-type: none"> <li>• Layered force posture composed of strategic nuclear forces to deter North Korea and to balance China's strategic forces, along with lower-yield weapons to counter and deter China's large conventional forces</li> </ul>
South Korea	<ul style="list-style-type: none"> <li>• Loss of faith in U.S. extended deterrence</li> <li>• North Korean aggression</li> <li>• Japan goes nuclear</li> </ul>	<ul style="list-style-type: none"> <li>• Deter North Korean aggression</li> <li>• Neutralize North Korean nuclear threat</li> </ul>	<ul style="list-style-type: none"> <li>• Militarize civil nuclear program</li> </ul>	<ul style="list-style-type: none"> <li>• Counterforce warfighting posture with low-yield weapons to neutralize North Korean nuclear forces while minimizing spillover effects on peninsula.</li> </ul>

# 02

## Analysis of Tabletop Exercises

Building upon a deductive framework and a set of initial hypotheses about how a highly proliferated world (HPW) might function, the CSIS study team gathered nuclear deterrence and regional specialists to participate in two tabletop exercises, exploring crisis scenarios in a highly proliferated Middle East and East Asia.

More specifically, these exercises were constructed to test the character of an HPW; general properties of stability and instability in an HPW; the role of the United States after a widely recognized failure of extended deterrence; how alliance relationships might function; the willingness of states to extend deterrence in an unstable and proliferated region; the influence of nuclear and conventional force disparities on deterrence in an HPW; and power structures between and among nuclear powers, including concepts such as spheres of influence.

The East Asia exercise was set in a highly proliferated Northeast Asia in 2035, with South Korea and Japan possessing small, but sophisticated, nuclear arsenals, and North Korea with a larger and more advanced nuclear force than it has today. The American military presence in the region had been scaled back to minimal levels. The scenario begins with a North Korean nuclear detonation in the Sea of Japan, in response to a Japanese surgical strike against a North Korean missile site.

During gameplay, China, in seeking to end the crisis swiftly in order to preempt a reintroduction of U.S. forces in the region, launches punitive conventional cruise missile strikes against North Korean nuclear missile forces at the outset of the exercise. Japan and South Korea seek a diplomatic solution to the crisis, but are prepared for further conventional strikes of their own as a contingency. The United States showed little interest in becoming more involved, beyond temporarily repositioning naval and air forces back in the region. China's aggressiveness early in the exercise attempted to punish North Korea, but North Korea's desire to save face and continued affronts by Japan and South Korea drove it to continue threats with the prospect of continued escalation.

The Middle East exercise was set in 2030, with a newly nuclear-armed Iran, Saudi Arabia, and Turkey. The scenario began with the ousting of the ruling family of Bahrain by an Iranian-fomented Shi'a uprising and assassination attempts against the Saudi royal family by Iranian paramilitary forces. Iran had moved nuclear-tipped short-range ballistic missiles (SRBMs) to Bahrain to deter Saudi Arabia from invading the island and restoring the ousted regime.

During the game, Saudi Arabia responded by pursuing an asymmetric campaign against Iran using Sunni extremist groups, resulting in the assassination of Iran's president and attacks on Iran's petroleum export infrastructure. The United States ended the exercise with air strikes

against the Iranian missiles in Bahrain. Iran called for international talks aimed at stabilizing the region and ending hostilities.

To be sure, tabletop exercises like these are conducted to generate insights and stimulate the imagination—efforts that invite further investigation and test hypotheses—rather than to generate conclusive or scientific results.

## Summary of Tabletop Exercise Game Play

Participants were invited from government, academia, and the national laboratories to play two half-day games. The participants represented a mix of nuclear deterrence experts and regional specialists. For both games, the participants were divided into four teams to play the major powers in each scenario while the control group played minor peripheral players and North Korea in the East Asia exercise.

Prior to each game, teams were presented with extensive briefing materials including maps and a primer on the background of how the postulated world became highly proliferated, including how its geopolitics functioned. Below is a summary of those documents.

### East Asia Tabletop Exercise Game Play

#### *Background—Path to a Highly Proliferated Asia-Pacific*

In the run-up to 2035, North Korea accelerated development of its nuclear and missile programs to the consternation of its neighbors. During prohibited testing, one ballistic missile fell on Japan causing fatalities. After the United States restrained Japan from striking North Korea and put into question the value of its extended deterrence commitments, Japan decided to develop a nuclear program. This in turn caused South Korea to follow suit. As a consequence of this proliferation, the United States withdrew many of its forces from the region yet still nominally maintained its alliance treaties.

#### *Crisis Scenario—North Korean Nuclear Demonstration in the Sea of Japan*

The crisis unfolds as Japan intercepts another North Korean missile near its territory and backs up its threats of retaliation with a limited conventional attack on a North Korean ballistic missile facility. Kim Jong-un responds to the attack with a nuclear demonstration in the Sea of Japan delivered by a fishing vessel. In response to the attack, the United States announces that it is sending elements of the 7th Fleet into the Sea of Japan where it has not patrolled in several years.

#### *Game Move One*

China unilaterally, and without warning its neighbors, launches a punitive conventional cruise missile strike against North Korea. A third of North Korea's missile forces are disabled. China declares, "We want to assure our neighbors in the region that China views this as a most serious breach of the international norm of nonuse of nuclear weapons and is determined to

restore that norm.” China engages South Korea and Japan, intentionally excluding the United States, and proposes a trilateral meeting to discuss the future of North Korea.

Japan, South Korea, and the United States pursue multilateral diplomacy to deescalate the crisis and contain North Korea. While Japan considers a conventional strike on North Korea, it decides to pursue a diplomatic solution before launching strikes.

South Korea seeks to avoid conflict on the peninsula unless it is under its own terms. All players ignore North Korea’s demands for the removal of the U.S. fleet from the region, for Japan to formally apologize and pay reparations, and for the international community to recognize its nuclear program.

At the end of the first turn, Japan took no action, South Korea had put all forces on high alert and deployed all of its nuclear missile submarines, China had struck North Korea, which left it with two-thirds of its missile forces, and the United States had deployed the 7th Fleet to the Sea of Japan while seeking to maintain minimum involvement.

### *Game Move Two*

North Korea engages in further short-range missile tests and artillery drills, and reiterates demands. These were again ignored by all other teams.

Japan praises China for its actions, but expresses concern about China’s increased influence in the region at the expense of the United States. Japan continues to encourage greater U.S. engagement, and the United States temporarily deploys heavy bombers to the Japanese mainland. Japan overtly deploys its nuclear-armed submarines.

China prepares for trilateral talks with the goal of communicating to all involved that China is the primary guarantor of security in the region.

South Korea attempts a coup in Pyongyang, which fails, and calls on all regional powers to embargo and blockade North Korea.

At the end of the second turn, China waited for trilateral talks to begin and took no actions. Japan readied for a military strike and coordinated with South Korea. South Korea had attempted a coup in Pyongyang. The United States continued to limit its involvement and tried to restrain Japan.

### *Game Move Three*

North Korea reiterates its demands, but signals its willingness to hold talks without preconditions. It is rebuffed. In the first minutes of the turn, North Korea sends additional “fishing vessels” to sea.

Japan’s objectives stay constant, but adds the objective of “preventing China from opportunistically encroaching on the Senkaku islands or asserting sovereignty claims.” Japan sends reinforcements to the Senkakus to preempt any action.

South Korea continues to “prepare for a multilateral summit in Seoul,” but takes no further action except to covertly make contingency plans for a potential North Korean strike.

China deploys six of its SSBN submarines. It also begins covertly preparing for regime change in North Korea.

The United States continues its de-escalatory policies in the hopes that it can provide an off-ramp for the North Koreans to stand down.

By the end of the last turn, South Korea and Japan had made plans for a joint strike on North Korea. The United States had successfully limited its involvement in the crisis and took no additional actions. China positioned itself for contingencies further afield and waited for the multilateral conference in Seoul.

## Middle East Tabletop Exercise Game Play

### *Background—Path to a Highly Proliferated Middle East*

By 2019, the conflicts in Syria and Yemen are resolved with pro-Iranian governments installed in both countries. In 2020, Turkey establishes a military base in Qatar. With its military failures in Yemen and Syria, Saudi Arabia begins losing the confidence of other Gulf Cooperation Council (GCC) rulers, and the council begins to fracture. In 2024, intelligence is uncovered indicating Iran has resumed its nuclear weapons program, and the nuclear agreement breaks down. Later that year, Iran tests a nuclear device. Saudi Arabia soon follows, testing a nuclear weapon it had acquired from Pakistan sometime in the past. Turkey leaks information indicating that they too have begun assembling nuclear weapons, but do not overtly test. The GCC fractures, with Kuwait, Oman, and Iran signing declarations of friendship and nonaggression.

Over the next two years, Saudi Arabia, the United States, and Israel execute a coordinated clandestine effort to undermine Iranian influence and roll back its nuclear program. Over time, Saudi Arabia enlists Sunni extremist groups to conduct attacks against Iranian political and civilian targets. The United States distances itself from Saudi Arabia, and eventually condemns their efforts. In 2029, Saudi military forces violently suppress civilian demonstrations in Bahrain. Saudi Arabia is globally condemned, and Iran vows to more aggressively confront Saudi Arabia’s “campaigns of terror and brutality.”

### *Crisis Scenario—Bahrain Missile Crisis*

The crisis presented to the tabletop exercise players begins on March 23, 2030, 12 days after an Iranian-backed Shi’a uprising overthrows the al-Khalifa regime in Bahrain. An interim governing council made up of Bahraini Shi’a clerics assumes political control and, at the request of the interim council, Iran extends a nuclear umbrella over Bahrain and places 15 short-range, nuclear-tipped missiles onto the island to deter foreign intervention. Saudi Arabia moves three guided multiple launch rocket systems (GMLRS) within range of Bahrain.

Causeway access from Saudi Arabia to Bahrain is cut off, requiring any insertion of troops by sea or air—unless the bridge is repaired. Violent protests, orchestrated by Iranian-supported provocateurs (possibly members of the Quds Force), erupt in Shi'a areas of Saudi Arabia.

On the night of March 22, the night before the scenario begins, three groups of gunmen attempt to storm several Saudi Royal residences throughout Saudi Arabia, in an apparent move to decapitate the regime. The largest attack takes place at Erga Palace in Riyadh, although Saudi Arabia claims the king was not in the residence at the time. Palace security forces take heavy casualties.

The United Arab Emirates requests U.S. protection, and asks the United States for an explicit nuclear security guarantee. Qatar, now with a Turkish military base established within its borders, reaches out to both the United States and Turkey for an explicit nuclear guarantee.

### *Game Move One*

Seeking to consolidate control of Bahrain and deescalate the crisis, Iran pursues an active political campaign to achieve international legitimacy of the new Bahraini government. It reaches out to Russia, China, and India to back the transition of power. It temporarily suspends its attacks against the Saudi Royal family.

Saudi Arabia aims to remove Iranian presence and influence in Bahrain by attempting to form a coalition with the United States, what is left of the GCC, and the remaining Arab world. It puts its conventional military forces on alert and seeks an agreement with Pakistan (played by the control group) to purchase additional nuclear weapons in order to buttress its strategic forces.

The United States deploys additional air power and missile defense forces to the region, including an F-22 fighter squadron to Saudi territory and B-21 heavy bombers to Diego Garcia. It reintroduces B61 nuclear gravity bombs back to its air base to Incirlik, Turkey, and expresses its commitment to defend the United Arab Emirates and Qatar “with all forces necessary,” but stops short of providing the explicit nuclear guarantee both countries are seeking. It issues a 24-hour ultimatum to Iran demanding it remove its nuclear missiles from Bahrain.

Turkey disperses its nuclear forces to increase their survivability and deploys F-35 fighters to Saudi Arabia in conjunction with the United States while seeking backdoor discussions with Iran to de-escalate the crisis—potentially trading Turkish recognition of the new Bahraini government for removal of the missiles.

The crown prince of Saudi Arabia is killed in an ambush by Iranian operatives that are operating without the consent of the Iranian government. Violence in Manama escalates with mob attacks on the Saudi Embassy and the looting and abuse of Turkish businesses and residents.

### *Game Move Two*

Iran's president is killed and its supreme leader is wounded in attacks across Iran carried out by Sunni extremist groups linked to Saudi intelligence.

Saudi Arabia appoints a charismatic leader known for his military experience as the new crown prince and moves additional military assets to its eastern region. It launches a covert operation to sabotage an Iranian nuclear reactor, which fails.

Seeking to divide any emerging coalition against it, Iran opens Bahrain to international inspectors, claiming that Iran does not have nuclear missiles in Bahrain. It secretly moves those missiles to camouflaged positions near hospitals and schools. Iran urges restraint among Shi'a groups in Saudi Arabia.

The United States continues its military buildup in the region to include a second carrier battle group. The president issues a public statement demanding Iran remove its missiles "from that imprisoned island."

Covertly, Turkey enters into talks with Iran with the aim to de-escalate the crisis. Turkey says it will not oppose self-determination of Bahrain in return for the removal of nuclear weapons.

### *Game Move Three*

The Americans strike and destroy the Iranian missiles in Bahrain with B-21 bombers. The attack destroys 15 Qiam-2 missiles and causes considerable collateral damage.

After the death of its president and hospitalization of its supreme leader, Iran chooses to stall and form an international investigation of the incident. It continues to build an international coalition of countries sympathetic to its interests.

Saudi Arabia bolsters the Arabian Gulf security structure with new bases and stronger alliances to deter Iran from taking further provocative actions. It establishes the goal of strengthening its nuclear deterrent until there is clear evidence that Iran is contained and accepts a stable security situation.

Turkey accepts the Iranian invitation to verify that Iranian missiles are not in Bahrain.

## Analysis of Tabletop Exercises

With the stipulation that tabletop exercises like this are admittedly limited in their character and what they are able to demonstrate, the two games conducted for this exercise generated lively and thoughtful discussions by participants and serious gameplay. The following represents a series of observations and insights as they pertain to the challenges of an HPW.

One weakness of the exercises was their brevity, with only three turns. In both cases, the potential for escalation was not fully explored, given limitations of time. Additional gameplay could have elaborated more fully the problems of nuclear escalation. The limited degree to

which exercise participants could change their mindsets to adapt to the highly proliferated nature of our scenarios constrained game play and influenced the below insights. More information on the mechanics and constraints of the game can be found in Appendix 1b.

Observations and insights from the two games include the following:

- *Geopolitics still matters in an HPW.* Despite the new strategic conditions resulting from proliferation, the same rough power disparities remain, and countries generally pursued their objectives in a similar fashion to what might be expected in a non-HPW, with few exceptions. The deterrence dynamics in both exercises were inconsistent with traditional deterrence theory in ways that could be explained by the unique geopolitical situations in which they took place, or by shortcomings with traditional deterrence theory. The exercises seem to have affirmed Paul Bracken's theory that longstanding geopolitical rivalries would take on a nuclear context.
- *Escalation control is problematic.* In the East Asia exercise, for instance, North Korea did not respond to China's conventional cruise missile strike against its strategic forces, while it was planning to respond in the event of a similar strike carried out by Japan, South Korea, or the United States. North Korea was deterred from retaliating against China, but not against its other neighbors. In the third and final move, both Japan and South Korea were planning on striking North Korea, and all three regional powers were preparing for eventual regime change in North Korea. Several participants later noted that a great deal of energy had been introduced into the North Korean system and if the game continued to play out the regime would likely have collapsed or been otherwise destroyed. In the Middle East exercise, the United States in the final move launched strikes on Iran's missiles in Bahrain. If this game had been allowed to continue, this action could have led to more escalation.
- *Denial of the nuclear dimension is profound.* In the East Asia exercise, many players looked for justification to deny that the nuclear threshold had been broken by North Korea. The Japanese team, for example, excused the loss of its warship and radioactive effects on its population because there was no evidence that North Korea had intended these consequences. It is uncertain what, if anything, can be deduced from this observation other than a penchant for members of the U.S. foreign policy community to maintain the nuclear threshold at all costs due to their desire for psychological comfort from believing that the nuclear threshold had not been crossed, even though it had been.
- *Nuclear-armed states, perhaps emboldened by their nuclear status, seemed more willing to take risks at the sub-nuclear level.* Several participants noted they did not feel that nuclear weapons gave them good options, but having nuclear weapons afforded them greater top-cover to take risks at the conventional level. This can be seen in particular with asymmetric action, such as Saudi Arabia's clandestine attacks on Iran and South Korea's attempts to orchestrate a coup in North Korea. One participant noted that "nuclear weapons made us feel free to wage conventional war on the Korean peninsula."

- *States were interested in a range of nuclear-sharing and extended deterrence arrangements, but willingness to commit to such arrangements was limited.* Despite having a quantitative disadvantage in the nuclear balance, neither South Korea nor Japan sought to regain extended deterrence commitments from the United States. While Japan and South Korea agreed to coordinate conventional strikes, they did not attempt to forge a nuclear-sharing agreement or other kind of coalition to bolster their nuclear deterrents. On the other hand, Turkey and the United States worked out a nuclear-sharing agreement at the behest of Turkey and the United States moved nuclear weapons to Incirlik. Qatar and the United Arab Emirates both asked Turkey and the United States for nuclear guarantees. Turkey refused both countries outright. The United States offered verbal commitments, but would not offer a formal written guarantee. Saudi Arabia also requested to purchase additional nuclear weapons from Pakistan.
- *Aversion to nuclear employment.* Despite the significant increase in the number of nuclear powers, players showed extraordinary reluctance to employ nuclear weapons. In the Middle East exercise, Iran received a near guarantee of success from the control group that it could eliminate the Saudis' nuclear arsenal, but they did not take the chance. Also, Iran neither employed, nor even postured, its nuclear forces after Saudi Arabia assassinated the Iranian president. As with the previous point, this may be an artifact of U.S. strategic culture, as nearly all of the exercise participants were from the United States.
- *Despite the near doubling of nuclear powers, significant strategic effects can be generated by nonnuclear means.* China was able to tip the nuclear balance with its conventional capabilities. Because there was no nuclear exchange, this point went untested, but Japan may have felt safe against a North Korean nuclear attack because of the effectiveness of its missile defenses as outlined in the background document. When assessing the balance of strategic forces, it is necessary to look at not just nuclear forces and their offensive delivery vehicles, but the whole continuum of nuclear and conventional capabilities that impact the balance of strategic forces. This point was corroborated in the Middle East exercise in which teams used terrorists and assassination to create strategic effects. Missile defense also appeared to contribute to stability. The game designers may have inadvertently created a game where the offensive was deemed too risky and active defenses dominated. Japan enjoyed a 70–80 percent intercept rate of the enemy's first 50 missiles fired, whereas South Korea enjoyed a 60–70 percent intercept of the enemy's first 50 missiles fired. These defenses conferred the advantage of time on both Japan and South Korea, which may have tempered the crisis. If attacked, their missile defenses would likely have given both Japan and South Korea the ability to weather the brunt of anything short of a very large North Korean missile attack, reducing the impetus for preemption.
- *While forward presence affected players' calculations, efforts to signal resolve had little impact.* The U.S. team in both exercises appeared more willing to use military force if it had significant military force already in the region, and if those forces were under direct threat. This was the case in the Middle East exercise, where the United

States began with a fairly robust military presence in the region. One of Iran's major concerns stated throughout was the risk of U.S. military intervention in Bahrain. Had the United States been largely absent from the region, Iran may have pursued its objectives more aggressively.

Conversely, in the East Asia exercise, the United States was largely withdrawn from the region at the outset of the scenario. Despite the United States taking traditional approaches to reassurance (deploying a carrier battle group to the Sea of Japan, temporarily deploying heavy bombers to Japan), the Japanese team still remarked during the exercise that "it appears the United States does not care much about regional stability." Furthermore, taking into account the unwillingness of the United States to use force against North Korea, South Korea stated its view that the remaining 1,000 U.S. troops on the Korean Peninsula were more valuable as a bargaining chip with China than as a tripwire to deter a North Korean attack.

- *Nuclear weapons did not always overcome conventional inferiority.* By using its superiority in the conventional realm, China was able to quickly reestablish control of the situation, and deter further nuclear employment by North Korea. China was able to "escalate to de-escalate" the crisis and punish North Korea because it enjoyed escalation dominance over North Korea.
- *Ambiguity and miscommunication were rife in the exercises.* When the United States offered nuclear guarantees to Turkey, Qatar, and the United Arab Emirates, the United States thought it was being sufficiently ambiguous in its wording to provide it with wiggle room. Turkey interpreted the U.S. statements as a firm nuclear guarantee while the UAE and Qatar (played by the control team) believed the United States was being too ambiguous and sought firm written agreements. Steps to counter cross-state and cross-cultural misunderstandings may become increasingly important, such as with more explicit declaratory policy.

# 03

## Rules of the Game

Having previously articulated a plausible path for the emergence of a highly proliferated world (HPW) and gamed some of its potential operations, the study group turned to a critical elaboration of how an HPW might function and to formulate “rules of the game” for how nations might interact while preserving strategic stability and avoiding catastrophe.

Some of the characteristics of how an HPW might function are more descriptive. The postulated absence of extended deterrence and the United States as the global security provider almost guarantees that much that we take for granted today will have changed.

Many of these characteristics, however, demonstrate how the conditions of an HPW would lend further to international instability. As with other moments in the history of the international system, the working of deterrence in an HPW is contingent upon considerable human choice. So while an HPW might “work,” it might also work *poorly*. Deterrence might function well in an HPW, or it might malfunction, with catastrophic consequences.

This chapter therefore begins with a summary describing how an HPW might function, and ends with “rules of the game,” a set of behavioral norms and customs that might contribute to stabilizing an HPW.

### How a Highly Proliferated World Might Function

Drawing on all phases of the study, the following description contains five basic characteristics of how an HPW might function:

- A more obviously anarchic international system, characterized by power politics.
- The return of the nuclear shadow and a return of seriousness about deterrence.
- Greater instability below the nuclear threshold.
- The continued persistence of geopolitics as shaping the international system.
- New strains on alliances, and their increased scarcity.

#### *An Anarchic International System Characterized by Power Politics*

In the post–World War II era, there have been two powerful constraints on the actions states might take—the “nuclear shadow” and the self-adopted role of the United States as stability-provider, both globally and regionally, and enforcer of a rules-based order. We refer to this

grand strategy broadly as “global engagement,” the brand name associated with the Clinton administration’s post–Cold War national security strategy.<sup>35</sup>

The primary distinguishing characteristic of an HPW is the significantly reduced influence of the United States in constraining actions of other states. The force of this influence will have been replaced in part by a heightened threat of nuclear conflict, but heightened threat alone will not make deterrence automatic or easy. While the United States was able to maintain relative global order with its superior conventional military capabilities, in an HPW smaller nuclear-armed states may feel more reliant on their nuclear arsenals to constrain aggressive neighbors wishing to upset the status quo.<sup>36</sup> Nevertheless, anytime the nuclear sword is unsheathed leaves open the possibility for misinterpretation and miscalculation, with potentially grave consequences.

Without the United States as global security provider, an HPW would likely be essentially anarchic in nature.<sup>37</sup> An HPW would require “rules,” but those rules would not be self-enforcing except insofar as states choose to enforce them. As Barry Posen notes, countries “can pursue their own interests with any means they choose because they are unconstrained by world law or world government or world police.”<sup>38</sup> In an anarchic system characterized by naked power politics, nation-states are competing not just about who enforces the rules, but also who “makes” the rules. States are constrained by the actions other states will take in response to what they do. Realists would contend this is already the case with the international order of today, but these features might be more pronounced and explicit.

In such a transformed international order of 2030 and beyond, power politics would be embraced more explicitly by nation-states. Nations would focus on core security interests, as they do now, a disposition Posen defines narrowly as “the preservation of sovereignty, safety, territorial integrity, and power position.”<sup>39</sup>

An illustration of the emerging anarchy that might characterize an HPW is provided by Vladimir Putin, who in October 2014 spoke under a banner that translated to “new rules or a game with no rules.”<sup>40</sup>

With the collapse of the Nuclear Nonproliferation Treaty (NPT) and the loss of the United States as global security provider, more aspirational views of rules-based order and international politics would also go by the wayside. The default national security approach of many states would be a hard-nosed, dispassionate “power politics.”

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<sup>35</sup> The White House, *A National Security Strategy of Engagement and Enlargement*, Washington, DC, February 1995, <http://www.dtic.mil/doctrine/doctrine/research/nss.pdf>.

<sup>36</sup> “Use” in this case does not mean detonation, but rather for posturing and strategic signaling.

<sup>37</sup> The word “anarchic” literally means “without rule or principle” (*an-arche*).

<sup>38</sup> Barry R. Posen, *Restraint: A New Foundation for U.S. Grand Strategy* (Ithaca, NY: Cornell University Press, 2015), 1.

<sup>39</sup> *Ibid.* Posen goes on to define relative power position as the “sum total of a state’s capabilities, which permits the state to defend its sovereignty, territorial integrity and safety against threats from other states.”

<sup>40</sup> Roberts, *The Case for U.S. Nuclear Weapons in the 21st Century*, 115.

## *The Nuclear Shadow Returns*

A second feature of an HPW is that more nations will become more serious about nuclear weapons and the details of nuclear deterrence. During the Cold War, nuclear deterrence was widely recognized as a very serious business because both superpowers believed their adversaries were implacably hostile and posed existential threats. Nuclear deterrence was then by far the top priority of the U.S. military. In an HPW, the “nuclear shadow” cast over interstate conflict expands in both density and coverage. This intensified salience of nuclear weapons could well return in an HPW, representing a kind of “back to the future.”

Perhaps the most influential American deterrence theorist, Thomas Schelling, knew that nuclear weapons had changed everything, and shaped the strategic environment like nothing else:

One can question whether we ought to use nuclear weapons deliberately to raise the risk of general war. But unless we are willing to do this, we should not introduce nuclear weapons against an adversary who has nuclear weapons on his side. . . . Once nuclear weapons are introduced, it is not the same war any longer. The tactical objectives and considerations that governed the original war are no longer controlling. It is now a war of nuclear bargaining and demonstration.<sup>41</sup>

During the Cold War, nuclear deterrence was primarily a concern for the two superpowers. Nevertheless, the United Kingdom and France became nuclear powers both to gain a “seat at the table” with the United States as leaders of the Western alliance (as symbolized by their status as permanent members of the U.N. Security Council) and to fully ensure their national sovereignty and autonomy. A similar dynamic could recur in the emergence and expansion of an HPW. Countries would see nuclear weapons as key to greater control over their own destiny and the preservation of their sovereignty and territorial integrity.

Today, we see states like the United States and United Kingdom openly debating and considering the abolition of nuclear weapons. In an HPW, such views would be even further marginalized. All nuclear states would take their deterrent forces seriously and steward them carefully. National sovereignty and autonomy would be more obviously and existentially linked to nuclear possession.

Not all states will seek to acquire nuclear capabilities, but even those that do not will live in a world defined and shaped by those capabilities. The renewed salience of nuclear weapons is both simple and compelling. No nuclear-armed state has ever been invaded and conquered, although this record is likely to be tested in an HPW.

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<sup>41</sup> Thomas C. Schelling, *Arms and Influence* (New Haven, CT: Yale University Press, 2008), 110.

## *Greater Instability below the Nuclear Threshold*

Another likely feature of an HPW is that it may be “hellishly competitive.”<sup>42</sup> The salience of nuclear weapons will be elevated as nation-states are forced to look out for themselves to ensure their sovereignty and territorial integrity. With the absence of the United States as global security provider, an HPW would be characterized by escalatory tactics, competition in risk-taking, and brinksmanship. Conflicts might at first seem manageable at lower levels, but unsuppressed or unpoliced regional tensions would carry the potential for escalation. Unlike the Cold War, which was fought by superpower adversaries with not-too-dissimilar strategic cultures that sometimes engaged in mirror-imaging, escalation dynamics in an HPW will be less predictable—and as such, potentially more unstable.

This brings to bear another perennial characteristic of deterrence that may become more pronounced in an HPW, namely the “stability-instability” paradox. The paradox describes the situation whereby nuclear weapons induce states to be more cautious in making large-scale moves against an adversary, but more prone to risk taking at lower levels of conflict, such as engaging in proxy conflicts, hybrid warfare, or state-sponsored terrorism. Jervis summarizes the concept thusly:

To the extent that the military balance is stable at the level of all-out nuclear war, it will become less stable at lower levels of violence. That is, if an uncontrolled war would lead to mutual destruction, then neither side should ever start one. But this very stability allows either side to use limited violence because the other’s threat to respond by all-out retaliation cannot be very credible. If the strategic balance were unstable and both sides feared that an increase in tensions could lead to WWII, then fierce competition would be seen as more dangerous, and more moderate behavior would be induced. But to the extent that all-out war is unthinkable, states have greater opportunities to push as hard as they can.<sup>43</sup>

This phenomenon is well explored in deterrence literature, and has been supported by real-world observations and again during the study’s tabletop exercises. Morgan and Mueller remark that, “Too often, leaders of new nuclear states presume that the threat implied by their newly acquired weapons provides them an umbrella beneath which they can safely risk provocative actions against their rivals,” citing Berlin, the Cuban missile crisis, the Indo-Pakistan conflict at Kargil, and other examples.<sup>44</sup> Nuclear weapons, for that matter, may not even adequately deter conventional aggression by a nonnuclear state against a nuclear state, as evidenced by China’s 1950 intervention in the Korean War.

In this study’s tabletop exercises, which involved high-stakes crises in both a highly proliferated Middle East and East Asia, players did not shy away from using asymmetric or conventional capabilities against nuclear-armed adversaries. Actions included attempts at

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<sup>42</sup> Barry R. Posen, “U.S. Security Policy in a Nuclear-Armed World, or What If Iraq Had Had Nuclear Weapons?,” in *The Coming Crisis: Nuclear Proliferation, U.S. Interests and World Order*, ed. Victor A. Utgoff (Cambridge, MA: MIT Press, 2000), 169.

<sup>43</sup> Robert Jervis, *The Illogic of American Nuclear Strategy* (Ithaca, NY: Cornell University Press, 1984), 31.

<sup>44</sup> Forrest E. Morgan et al., *Dangerous Thresholds: Managing Escalation in the 21st Century* (Santa Monica, CA: RAND, 2008), 113.

regime decapitation and punitive conventional strikes. One participant remarked that “having our own nuclear deterrent made us feel free to wage conventional war on the [Korean] Peninsula.” Although the games were abbreviated and thus did not have an opportunity to pursue the consequences of these steps, one may surmise that regional tensions and sub-nuclear escalation contain ample seeds to seriously disrupt strategic stability.

While the stability-instability paradox is not a new feature of nuclear deterrence, its effects would be much more pronounced in an HPW.

### *Persistence of Geopolitics*

Geopolitics never goes away in international politics, and neither would it do so with the emergence of an HPW. Despite more nuclear players, underlying power disparities and geographical relationships will still likely be the driving factor for state-actors. Major nuclear powers like Russia, China, and the United States will be distinct from minor or weak nuclear powers, and will have means to leverage their relative power position within their regions or areas of influence.

Nuclear proliferation will without doubt affect regional balances of power, but there is little reason to believe that proliferation will confine the interests of states into lanes so narrow as to preclude the potential for conflict. As Wohlstetter concluded,

Short of nuclear exchanges, the dispersion of nuclear weapons will affect world distribution of power. It will do so because something real will have changed. On the other hand, world power relationships will probably not be wholly transformed. For instance, it is difficult to find evidence that the British, French and Chinese nuclear programs have radically added to the effective power of these countries and, as we have seen, even greater constraints will be faced by smaller nuclear forces than these.<sup>45</sup>

### *Fewer Alliances*

A final likely characteristic of an HPW is that the cost and risk of alliances will go up, and their numbers would therefore go down, not merely with the United States but also among other countries. This study’s postulated HPW includes several current U.S. allies and partners among those that acquire nuclear weapons: allies such as Turkey, Poland, Japan, and South Korea, and partners such as Saudi Arabia. In such a world, it may or may not make sense for the United States to retain its nuclear umbrella in its current form and extent, not merely for NATO members but also for others. The gradual perceived or real failure of extended deterrence could thus be both a cause and an effect of an HPW. So as to avoid being drawn into a nuclear conflict through Article V-type commitments, the United States may look to modify or reinterpret its alliances as more circumscribed, more temporary, and more hedged.

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<sup>45</sup> Wohlstetter et al., *Moving toward Life in a Nuclear Armed Crowd?*, 153.

Global alliances and partnerships are unlikely to completely disappear, but their character would likely change. Alliances might be based less on extended deterrence or even mutual promises of defense, and more on other forms of defense cooperation. Nevertheless, larger nations are still likely to seek influence over smaller nations and strategically important regions, be they highly proliferated or not. Many other factors motivate influence-seeking behavior. Commercial interests, and even cultural and ethnic connectivity, will keep nations involved with each other in one form or another.<sup>46</sup> The primary U.S. interest in a region is maintaining stability and predictability in the steady supply of resources. This will not change post-proliferation.

Major nuclear powers seeking to promote stability in a region may do so through transfers of nuclear weapons technology and other such assistance. This could include assistance in making nascent nuclear forces less vulnerable to a preemptive counterforce strike, or providing damage limitation capabilities like missile defenses, passive defense, and civil defense.

Despite a less credible “nuclear umbrella,” pursuit of U.S. backing could still remain a key goal in regional crisis. With nuclear thresholds intact, regional U.S. partners such as Japan may see American promises of conventional defense as more credible than the promise of a nuclear umbrella. Such coupling, however, would take place under the shadow of the nuclear weapons that both countries possess.

In this setting, the United States may be reluctant to extend deterrence to more states, and may indeed walk back forward presence or renounce past extended deterrence commitments. As allies and adversaries acquire nuclear weapons, the United States and its allies would reevaluate and rearticulate the modified nature of the alliance. The impulse for extended deterrence-type relationships will not cease, but would take on forms and relationships quite different from those of today.

## Rules of the Game in a Highly Proliferated World

The above attributes of how an HPW might function do not themselves yield a stable, let alone an automatically peaceful, system. On the contrary, strategic stability and escalation control in an HPW may be even more elusive and harder wrought than in the Cold War or the current post–Cold War era. The prospects for increased instability and escalation below the nuclear threshold, the prospects for continued regional and geopolitical power struggles, and the prospects for risk-taking can together represent a recipe for instability. Even today, Russian strategy suggests that it believes that it can safely push boundaries of stability below the nuclear threshold. Identifying these problems and tailoring normative solutions to them will become a key feature of making deterrence work in an HPW.

As used here, “rules of the game” refers to the behavioral norms, customs, or understandings to which nations agree to in order to make their interactions more predictable and less

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<sup>46</sup> Barring an unexpected transformation of global energy markets, Saudi Arabia and the UAE would still provide the world with 10–20 percent of its daily petroleum needs. U.S. Energy Information Administration, “International,” 2016, <http://www.eia.gov/beta/international/>.

destabilizing. In a sense, “rules of the game” are a broader application of the concept of “rules of engagement” that nations tacitly agree to during wartime. Secretary of Defense Carter recently observed that the United States is “promoting shared rules of the road,” with reference to actions by Russia and China that threaten to overturn a rules-based international order.<sup>47</sup> The term “rules of the road” may overstate how fixed and enforceable these “rules” can be. Indeed, within an anarchic system, rules are not self-creating or self-enforcing. The respect norms garner flows from the willingness of major powers to insist upon and enforce them in their power relations.

The prescriptive rules for an HPW are fivefold:

- Deterrence credibility depends in part on the perceived will to employ nuclear weapons.
- The nuclear threshold will continue to be recognized and remain significant, even if crossed.
- Extended deterrence will be more limited and guarantees will be more selective.
- Actions speak louder than words, but words matter to avoid misperception.
- An imperative to limit national objectives and respond proportionately.

#### *Credibility Depends upon Perceived Will*

The first prescriptive rule for an HPW represents a return to the first principles of deterrence. No deterrent, nuclear or otherwise, can be effective without the perceived will to execute what one threatens. In an HPW, the stakes of nuclear threats will almost certainly be increased, so it becomes all the more urgent that they be believed. A major part of being perceived as willing, of course, is being willing.<sup>48</sup>

The eminent Cold War deterrence theorist Herman Kahn knew that a commitment to “nuclear warfighting” was essential to an effective deterrent:

Deterrence, therefore, is not just a matter of military capabilities; it has a great deal to do with perceptions of credibility, i.e., the other side’s estimates of one’s determination, courage and national objectives. If the enemy is (correctly) convinced that you will not use your weapons, then it does not matter how sophisticated or powerful your weapons are. In many cases, it is what allies and others think, or what they think the main opponents think, or what the opponents think, and so on, that is decisive.<sup>49</sup>

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<sup>47</sup> Ashton Carter, “Strategic and Operational Innovation at a Time of Transition and Turbulence” (speech, Reagan Defense Forum, November 7, 2015), <http://www.defense.gov/News/News-Transcripts/Transcript-View/Article/628147/remarks-on-strategic-and-operational-innovation-at-a-time-of-transition-and-tur>.

<sup>48</sup> Herman Kahn, *On Thermonuclear War* (New Brunswick, NJ: Transaction Publishers, 2007), 287.

<sup>49</sup> Herman Kahn, *On Escalation: Metaphors and Scenarios*, Rev. Ed. (New York: Frederick A. Praeger, 1968), 89.

A reputation for willingness to use nuclear weapons in an HPW may require greater attention to military nuclear operations, or what might be called “nuclear readiness.” The notions that deterrence is “inherent” in one’s nuclear capability or that nuclear deterrence is somehow “existential” will have little credibility. “Without the threat of use,” Thérèse Delpech notes, “use may become more likely.”<sup>50</sup>

For Schelling, a nation’s “reputation for action” is its most prized asset—not what nations say, but what they do: “The actual talk, especially the formal talk, is only a part of this [nuclear bargaining], often a small part, and since talk is cheap, it is often deeds and displays that matter most.”<sup>51</sup>

Actions may speak louder than words, and a reputation for action would take on increased importance to sustain credibility. How nations posture their nuclear forces—the capabilities they acquire, their readiness to execute the nuclear mission, their reputation for doing what they say—is often the best indicator of a nation’s willingness to employ them if necessary.

A real or perceived lack of nuclear readiness, on the other hand, would signal to friends and foes alike that a nation’s leadership does not really believe their weapons would ever be employed. No one wants to go to war with unprepared forces, so being unprepared suggests that you do not think you will have to go to war. Believing nuclear war is “unthinkable” or saying that preparations for “nuclear warfighting” are dangerous adds to that impression.

These principles of deterrence are perennial, but would take on increased urgency in the circumstances of an HPW.

### *Nuclear Threshold Remains*

The renewed salience of nuclear readiness will not render the nuclear threshold obsolete, not even in the postulated HPW. Even should nuclear employment begin to occur more frequently, it is hard to imagine that it would ever become ordinary rather than extraordinary. Nuclear weapons are different and, as such, nuclear employment would likely remain as a firebreak—a “recognizable, qualitative distinction that both combatants can recognize and agree upon if they want to.”<sup>52</sup>

Even if an HPW ushers in the end of the seven-decade tradition of nonemployment and the future brings occasions of regional conflicts between nuclear-armed states, the distinction seems unlikely to be lost entirely. Restraint and the respect for the nuclear threshold may

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<sup>50</sup> In fuller context, Delpech argues that “An even more worrisome meaning of self-deterrence is the reticence, or the refusal, to exert nuclear deterrence in any event, either due to fear of the consequences or because the abhorrence of possible nuclear use is stronger than the perceived need to retaliate in case of an attack. This would be a most dangerous stance: Without the threat of use, use may become more likely.” Thérèse Delpech, *Nuclear Deterrence in the 21st Century* (Santa Monica, CA: RAND, 2012), 34–35.

<sup>51</sup> Schelling, *Arms and Influence*, 136.

<sup>52</sup> Kahn, *On Escalation*, 94.

come not from norms of nonuse, but from the mutual interest in controlling escalation and in terminating or limiting a nuclear war should it begin.<sup>53</sup>

### *Extended Deterrence Becomes More Limited*

Of all the nuclear powers, the United States is the only one to extensively offer its nuclear umbrella as a means of assurance for its allies and friends. The U.S. extended nuclear guarantee is the basis of NATO's nuclear alliance and for several key bilateral Asian alliances with Japan, South Korea, and Australia. More recently, the United States has touted its nuclear security guarantees as an indispensable nonproliferation tool because the nuclear umbrella obviates the need of its nonnuclear allies to seek their own nuclear deterrent.

In the HPW of post-2030, that umbrella is tattered and partly closed after the United States lost credibility with the very states it sought to assure. In this new world, the United States may continue to extend nuclear deterrence, but the price will be higher. The effect achieved by the former Soviet Union in neutralizing Finland, for instance, could come to be employed by all the major nuclear powers to police their regions and avoid nuclear coercion from lesser powers.

The risk associated with extending nuclear deterrence would not be equal for all cases in an HPW. A major nuclear power such as Russia, for instance, may place (or communicate that it places) considerably more importance on Poland than China might place on, say, Australia. An American choice to merely withdraw extended deterrence guarantees to a country such as Poland or South Korea would not settle the issue, however. In 1950, it was official U.S. policy that South Korea was beyond the U.S. security perimeter—that is, until North Korea invaded, and the United States came to its defense. This element of unpredictability, of how the United States will react to new realities, probably strengthened deterrence during the Cold War but, as with the case of Korea in 1950, unpredictability would raise the risk of miscommunication and miscalculation. This kind of unlimited and unpredictable scope for national objectives may have been acceptable in the early Cold War. A similar version of global engagement may have been acceptable in the post-Cold War era.

The United States in particular would need to identify a new national security strategy suited to this world and stick with it. In an HPW made possible in part by the failure of extended deterrence, the unexpected reversion to an interventionist strategy might itself be a source of instability. The reinsertion of U.S. power after a period of absence might be analogous to the appearance of a new power bent on upsetting the status quo.

### *Attention to Words and Deeds*

While deeds may be more important than words, words are components of action and speeches are themselves deeds. The possibility of increased miscommunication and misperception mean that nations cannot leave it to chance or hope that their actions will be interpreted how they intended them. The flushing of submarines or the alerting of bombers

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<sup>53</sup> As NATO did during the Cold War, several nations (including Russia and Pakistan) have more recently adopted first use and perhaps early use of a nuclear weapon to cope with a conventionally superior adversary.

might go unnoticed, or alternatively be perceived differently than intended, especially with widely varying intelligence capabilities and the continual suspicion of disinformation. Such actions may require words to accompany, announcements and explanations.

The possibilities for misperception, mistrust, and miscommunication will also likely multiply in an HPW, so declaratory policy may indeed become more important too, specifically in terms of the importance that nations say what they mean and mean what they say. The imperative for limited national objectives and proportional responses carries with it the importance of not inviting or provoking escalation or encouraging false hopes or fears.

### *A Non-escalation Imperative to Limit Objectives and Responses*

A final rule for an HPW is a sort of imperative, but as with the other rules it is not self-enforcing. With more nations joining the nuclear club, the risk of nuclear escalation likewise increases. Keeping conflicts nonnuclear, therefore, will require the propagation of norms or expectations that nations should limit their objectives and, in the event of escalation, should be prepared to detect and curb it, even at considerable cost. An international order with this expectation may rule out regime-changing campaigns against “illegitimate” leaders like in North Korea. Keeping conflicts well below the nuclear threshold will include a preference for proportional measures rather than escalation, although this imperative may come in tension with nationalistic impulses, desires to save face, and differing perceptions about what is “proportionate,” as well as incompatible interpretations of risks attached to such behaviors.<sup>54</sup> These dynamics are perennial for crises and escalation, but with more nuclear actors would take on increased difficulties and risk.

In an HPW, nations would be under the imperative to be more circumspect about pledging to come to the aid of others or making what is perceived as a nuclear threat, but this imperative will not always be followed. When President George W. Bush was asked in early 2001 how far the United States would go in defending Taiwan, he replied, “Whatever it took.”<sup>55</sup> Few believed then, and no one believes now, that this included a willingness to risk nuclear escalation. The transformation of the international system that accompanies the emergence of an HPW would likely curb and deter such comments.

This hope of restraint could be in vain, however, or prove elusive if major powers were challenged by their regional neighbors—such as if Russia were presented with the emergence or provocation by a nuclear neighbor like Poland or China with a nuclear Japan.

Weaker nuclear powers with more to gain, and nonnuclear powers trying to catalyze nuclear states to come to their aid, pose more difficult cases. The “non-escalation” imperative is in direct tension with other likely attributes of an HPW described above, most notably the

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<sup>54</sup> In advocating the utility of the Talmudic construct of *lex talionis* (tit-for-tat exchanges), Herman Kahn notes: “every primitive tribe, in the absence of a legislature and courts, has adopted some form of *lex talionis* as part of its legal system.” Having the punishment fit the crime seems intuitively reasonable to humans, either acting on their own behalf or making decisions on behalf of the nation state they lead. Persuading states to accept the “tits for tats” in the interest of non-escalation will remain a perennial challenge. Herman Kahn, *Thinking about the Unthinkable in the 1980s* (New York: Simon & Schuster, 1984), 62.

<sup>55</sup> David E. Sanger, “U.S. Would Defend Taiwan, Bush Says,” *New York Times*, April 26, 2001, <http://www.nytimes.com/2001/04/26/world/us-would-defend-taiwan-bush-says.html?pagewanted=all>.

propensity for risk-taking and hellish competition at sub-nuclear levels. So while this rule or imperative presents itself as urgent, its implementation would be difficult. Failure to prevent escalation, however, would imperil strategic stability.

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As noted above, this study posits five descriptive characteristics notable for how an HPW might function, and five prescriptive "rules" to which nations should, hopefully, be attentive in the interest of their own and global stability.

These characteristics and rules have implications, of course, for our understanding of key deterrence concepts, and also for the United States in particular, these implications are the topic of Chapters 4 and 5.

# 04

## Key Deterrence Concepts

A world of 15 nuclear powers would have implications for key concepts of deterrence, extended deterrence, and strategic stability. While at some level the concepts remain fundamentally the same, their application to significantly changed circumstances would yield different results than are sometimes accepted today. A world of more nuclear states may especially require special attention to signaling and communication to preclude miscommunication and tragic deterrence failure.

### Deterrence

The concept and fundamentals of deterrence predate the existence of nuclear weapons, and will endure the emergence of a highly proliferated world (HPW). Deterrence is variously defined, but fundamentally it is the use or threats of force to convince an adversary not to take some course of action. The details of nuclear deterrent strategies, however, could change significantly in an HPW.

How a greater number of states go about deterring one another, how effective that will be, what and whom they choose to focus on deterring, and their regional pressures to heighten the salience of nuclear deterrence would likely change with the number and character of their nuclear neighbors.

The effectiveness of a deterrence strategy in an HPW would continue to rest on fundamental questions of what are we trying to deter, from whom, against whom, and with what means.

Deterrence, to be sure, depends much upon capability and will. Particularly with respect to nuclear weapons, it depends upon the perceived willingness of the deterrer to employ them, rather than be “self-deterred.” The notions that deterrence is “inherent,” “automatic,” or “existential” in a state’s nuclear capability, however, would have little standing in an HPW.

In an HPW where more nuclear states are more anxious about regional threats, the importance and urgency of such credibility will be of increased importance. As noted below, ambiguity, miscommunication, and of course misperception could have higher risks—and perhaps higher costs—in an HPW. Declaratory policy and reassuring language will remain important for communication and avoiding miscommunication, but may require more explicit and specific language than that typical of today.

A credible and perhaps demonstrable commitment to nuclear operations would likely be recognized as the core of an effective nuclear deterrent. Today, talking about such readiness is sometimes dismissed as preparations for “nuclear warfighting,” but the increased urgency and problematic character of deterrence in such a world would make the importance of

military readiness more obvious. Perhaps this has always been the case, but it would be salient and obvious in an HPW.

## Alliances and Extended Deterrence

Alliances will not completely disappear in an HPW, but will in most cases differ from the extended deterrence relationships that existed between the United States and its several NATO and non-NATO allies. These relationships would be based less on extended deterrence (extending a nuclear umbrella over nonnuclear allies and promising to bring it to bear if they are attacked) and more on assistance with and cooperation on nuclear and conventional capabilities.

One possibility is that the major powers, including the United States, will largely avoid alliances because of increased risks of nuclear entanglement or entrapment. Another possibility is that alliances will be more comparable to the shifting and temporary alliances of nineteenth-century Europe or the vassal/suzerainty relationship characteristic of pre-colonial empires.

Extended deterrence may continue among fewer nations than those currently under the U.S. umbrella. Newer forms of extended deterrence need not be limited, however, to the United States. China and Russia could extend guarantees to their allies or others within their sphere of influence, either traditional tributaries to the Middle Kingdom, or subject states within the "near abroad." To compensate for the lack of the United States, minor or weak nuclear powers may band together, or with nonnuclear powers, for regional alliances of convenience (e.g., Poland and the Baltics, Japan and Australia, Iran and its non-Sunni neighbors).

Likewise, the United States may continue to offer extended deterrence guarantees on a more selective basis than it does today. These alliances might be with nonnuclear regional states that are both more trusted and less seriously threatened by a nuclear-armed adversary.

In an HPW, however, U.S. extended deterrence has lost much of its credibility and allies and friends are less dependent on the United States for their security. Real assurance, to the extent it exists, will depend on effective and demonstrated deterrence. The degree to which extended deterrence has failed, or the degree to which states can be assured, will differ across and within regions throughout the hierarchy of nuclear powers.

Numerous scholars have been pessimistic about the survival of alliance structures in an HPW. Stephen Rosen, for instance, has argued that "as a somewhat unexpected consequence of nuclear proliferation, we should expect not a world full of nuclear war, but a world in which alliances are weak or nonexistent."<sup>56</sup> Wohlstetter also writes that "an increasing question as to which great powers will be as prepared in the future as in the past to provide alliance guarantees to nations in a nuclear crowd."<sup>57</sup>

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<sup>56</sup> Stephen Rosen, "Nuclear Proliferation and Alliance Relations," in *The Coming Crisis: Nuclear Proliferation, U.S. Interests and World Order*, ed. Victor A. Utgoff (Cambridge, MA: MIT Press, 2000), 154.

<sup>57</sup> Wohlstetter et al., *Moving toward Life in a Nuclear Armed Crowd?*, 149.

History, however, tells a complicated story. The U.S. alliances with Britain and France did not vanish when they acquired their own deterrents. Nor did U.S. commitment to nonnuclear countries in NATO fade in the face of increasing Soviet nuclear weapons capability. The United States still supports Israel, and China still keeps the lights on in Pyongyang. The United States has also tolerated Pakistan's nuclear program when it desired Pakistani cooperation. Such behavior suggests that great powers will not simply turn their back on their allies once they go nuclear. The outcomes of the tabletop exercises conducted for this study also suggest that countries will continue seeking partnerships against common threats, despite the perceived strategic independence afforded by the possession of nuclear weapons.

Nevertheless, simply getting to an HPW would likely require a breakdown of the functioning of U.S. extended deterrence, fundamentally changing global alliance relationships. In a world where positive security guarantees are less credible or desirable, major nuclear powers may seek to tip or balance the scales of deterrence through other means of support, such as with transfers of technology to their smaller nuclear-armed partners. Wohlstetter argued that such behavior may have either a stabilizing or destabilizing influence, depending on the objectives of the large power: "Indeed, the problem is more worrisome given the capacity of advanced states to rapidly transfer technologies or information which could rapidly make opposing forces vulnerable."<sup>58</sup>

Conversely, such assistance may be more benign, such as helping make forces less vulnerable, and more secure from the risk of accidental launch or seizure by nonstate actors. Furthermore, not all assistance may be hardware-based. Arguing the virtues of "managed proliferation," Mearsheimer points out that "existing nuclear powers . . . can help socialize emerging nuclear societies to understand the nature of the forces they are acquiring."<sup>59</sup>

For the United States, however, providing such assistance may not be so simple. As Rosen points out, "there will be little that the United States will be able to do militarily to help or hurt nations locked in a relationship of stable nuclear deterrence, short of offering to provide credible first strike capabilities or credible antinuclear defense—and practical and political constraints on the United States will limit its ability to do either."<sup>60</sup> Nevertheless, other major nuclear powers, such as Russia and China, may find fewer political barriers to offering such assistance, potentially pulling into their spheres past allies and partners of the United States.

## Strategic Stability

The concept of strategic stability has also been used in a wide variety of ways, sometimes to stand as a synonym for whatever one finds good or useful. In an HPW, strategic stability might be defined as the absence of a nuclear exchange or circumstances that might escalate to one. By definition, lower (albeit still respected) nuclear thresholds and an increased number of regionally focused nuclear powers are in almost existential tension with strategic stability. Deeply rooted regional and sectarian tensions will continue, and in Paul Bracken's

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<sup>58</sup> Ibid., 151.

<sup>59</sup> John J. Mearsheimer, "Back to the Future: Instability in Europe After the Cold War," *International Security* 15 no. 1 (Summer 1990): 38.

<sup>60</sup> Rosen, "Nuclear Proliferation and Alliance Relations," 153.

words, “will be driven by intense, emotional regional rivalries, now set in a nuclear context. The mood will be much closer to the street.”<sup>61</sup>

The stability of a multipolar system of great powers has at times been historically linked to the presence of a “balancer” and mutually recognized spheres of influence, as with the United Kingdom in the nineteenth century. By contrast, the competition between the great powers in the 2030+ assumed world could be quite unstable, because the United States has both disengaged from its role as balancer, and, in part because of its legacy from the post–Cold War unipolar era, has rejected spheres of influence as an implicit rule of the system. While much of the Great Game of nineteenth-century politics was over spheres of influence, the condition of “nuclear anarchy” that prevails in an HPW might push even major nuclear powers toward autarky, self-isolation, and minimalist foreign policy agendas. Alternatively, nuclear anarchy could push ambitious states to take advantage of power vacuums and a more absent America to take greater risks, at their peril. Whereas the former could notionally contribute to strategic stability, the latter might be more prone to upset it.

Strategic stability is often understood as the stability of deterrence or, more specifically, nuclear deterrence. From the earliest days of the Cold War there has been an effort to ensure that strategic stability was indeed solid, rather than “delicate.” As Schelling observed in 2013:

Now the world is so much changed, so much more complicated, so multivariate, so unpredictable, involving so many nations and cultures and languages in nuclear relationships, many of them asymmetric, that it is even difficult to know how many meanings there are for “strategic stability,” or how many different kinds of such stability there may be among so many different international relationships, or what “stable deterrence” is supposed to deter in a world of proliferated weapons.<sup>62</sup>

Strategic stability could mean something new, however, in a world where global stability depends upon the sum of regional stabilities. In such a touchy HPW, strategic stability could be both more challenging and more urgent, and new and imaginative measures may be required to create, maintain, and restore strategic stability to preclude or terminate conflict between nuclear actors.

New “non-escalation” or “de-escalation” norms may likewise need to be created, not to preclude or forbid nuclear employment, but to control and limit such employment. Such a norm, however, is unlikely to take root without enforcement by major powers. As a major nuclear power, the United States may need to police or superintend other minor or weak regional nuclear powers, especially those within its sphere of influence or loose alliance structure (e.g., Japan or Poland), so as to avoid conflict with major nuclear powers in their neighborhoods (e.g., China or Russia).

Within the taxonomy of the HPW, regional nuclear powers may maintain their own region-specific nuclear thresholds that may differ across the taxonomy of nuclear and nonnuclear

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<sup>61</sup> Bracken, *The Second Nuclear Age*, 115.

<sup>62</sup> Thomas Schelling, “Foreword,” in *Strategic Stability: Contending Interpretations*, ed. Elbridge A. Colby and Michael S. Gerson (Carlisle, PA: Strategic Studies Institute, 2013), vii–viii.

powers. Different types of signaling with nuclear weapons, for instance flushing out nuclear submarines or dispersing mobile missiles, may be perceived as crossing a threshold in one region or “nuclear community,” but not another. Such misperceived or missed signals could be seen as a green light to aggressive actions. The major nuclear powers or “policemen” may have to be especially attentive to these regional idiosyncrasies. The United States must be cognizant of these differences and realize that deterrence efforts in the future will be more complicated, tailored, and regional.

# 05

## Implications for the United States

The deductive reasoning of the assumed world, the insights of the two tabletop exercises, and the effect of a highly proliferated world (HPW) on key deterrence concepts also contribute to several insights into how such a world might affect the United States. These insights include implications for America's overall national security posture and global presence, its foreign policy, its allied relationships, its nuclear strategy, policy, and posture—and, perhaps most fundamentally, for American attitudes toward nuclear weapons.

### America's Role in a Highly Proliferated World

This study begins with the assumption that significant global changes would not be required for an HPW to emerge by 2030. On the contrary, the continuation of current trends could well be sufficient for the emergence of an HPW, aided perhaps only by continued perceptions and doubts about the failure of U.S. extended deterrence.

Although an HPW could well emerge through gradual rather than dramatic changes, its emergence *would* itself likely effect significant change, and would force the United States to reevaluate its role in the world, its national security strategy, and its currently articulated view of extended deterrence. Allies who acquire nuclear weapons of their own may do so without asking America's permission, or they may discard treaties and past extended deterrence relationships, much as Great Britain and France did from within NATO. Adjusting doctrine, policy, and alliance relationships to the conditions of an HPW would take time and considerable thought.

How the United States perceives its role is arguably at the core of its strategic communications, its military force posture, and how it interacts with other nations. As an HPW emerged, the United States would face a choice between continuing and formalizing the *de facto* policy of disengagement that made an HPW possible, or conversely attempt (perhaps all too late) to reassert itself as the primary guarantor of global security and stability.

In addition to these future implications, an implication for today is that the United States could begin to evaluate whether current trends leading to doubts about extended deterrence could be corrected, as well as make an honest assessment about continuing to have the stated pursuit of a robust strategy of global engagement. What is the United States doing today that would encourage its allies and partners to doubt its role as global security provider? What is the United States doing or failing to do that might contribute to reduced assurance and confidence in the U.S. extended deterrence guarantee? Such a candid assessment could potentially preclude or delay the emergence of an HPW.

## Policy Credibility and Clarity

This study has identified several theoretical factors that could lend stability to an HPW. These include a mutual recognition, especially between and among major and minor nuclear powers, of asymmetric interests within their respective regions. This mutual recognition would be improved by greater attention to consistency and predictability in power projection behavior, with clear strategic messaging reinforced by action, and the need for states to keep their objectives limited and clearly identified. A prescriptive rule under which states entertain more limited objectives could of course be exploited and those with more limited national objectives might become susceptible to blackmail and brinksmanship by other states.

These factors are clearly at odds with some features of current American foreign policy, including the principled refusal to recognize “spheres of influence” as opposed to the insistence upon a rules-based international order and the global commons; expansive and vague definitions of U.S. security goals and objectives; relying on ambiguity as a part of its deterrence policy; and vacillation between interventionist and noninterventionist tendencies.

Ambiguity and unpredictability can lead to misinterpretation of intent, which can in turn lead to miscalculation and conflict. Deterrence arguably failed in 1990 with the Iraqi invasion of Kuwait, due at least in part to Saddam Hussein’s miscalculation of the United States’ willingness to intervene on Kuwait’s behalf. Such instances of unpredictability may also be observed in recent history, as with the 2011 intervention in Libya and the 2013 nonintervention in Syria.

Ambiguity as a deterrent tool may have had success at times when nuclear-armed states were few, but the effects could be different with a multiplicity of nuclear-armed actors. In an HPW, such ambiguity would increase the risk of miscommunication and deterrence failure, with potentially devastating consequences. Just as ambiguity on foreign policy can be generally problematic, it could be dangerous in the nuclear realm. The havoc that strategic miscalculation can cause in a nonnuclear context may be more limited, whereas the stakes would be higher in a world of many nuclear powers

Creating stability in an HPW may require the United States to modify some of these past habits, and in particular improve the clarity and specificity with which it identifies and protects its core national security interests. This is not to say the United States should adopt a strictly noninterventionist foreign policy, but that global stability and security in an HPW may be better served if other powers, particularly nuclear-armed states, have a clearer idea about when to expect U.S. involvement in a regional issue, and when not to. Strategic communication, in turn, must be less ambiguous, and red lines should be backed by firm action to reinforce the meaningful character of these more precisely defined national interests. To be credible, nuclear threats in particular might have to be more explicit and specific.

## Nonproliferation and Counterproliferation

After having backed away from more-comprehensive alliance relationships, the United States might fundamentally reverse its position on nonproliferation and counterproliferation. Instead of retaining a categorical opposition to proliferation, the United States could instead actively aid the nuclear capabilities of other friendly nuclear powers, in the interest of regional security. Today's policy of dissuading friends and allies from acquiring their own nuclear force, could thus be turned on its head. Regardless of their nuclear status, minor and weak nuclear states will consider innovative nuclear-sharing agreements, and nonnuclear states will request extended deterrence commitments from major and minor nuclear states. The United States will need to be prepared with a policy to respond to such requests, guided by a clear assessment of core national security interests.

## Nuclear Force Strategy and Posture

Another key implication of an HPW for the United States concerns adjustments to its nuclear strategy, policy, and posture, as well as to the associated concepts of arms control and norm creation. At the root of each of these modifications is the requirement that the United States "get real" about nuclear weapons. This means shedding the current aversion to thinking about the unthinkable—that is, nuclear employment. In particular, this would require increased salience of the nuclear mission and a reinvigoration of attention to military readiness for actual nuclear operations.

How a nation "postures" its nuclear forces—for example, the capabilities it acquires and the readiness of those forces to execute nuclear missions—is often the best indicator of a nation's willingness to employ them. The decision to employ a nuclear weapon is perhaps the most serious one that a nation's leadership would ever make, and a lack of "nuclear readiness," indicates a lack of seriousness in this realm. In an HPW, the United States and other major nuclear powers might publicize their postures to communicate their strength and their threats against challengers, while minor or weaker nuclear powers might still engage in greater secrecy to cloak their vulnerabilities.

Because an HPW could be competitive and unstable, the United States must be politically, diplomatically, and militarily prepared for greater instability at lower levels of conflict. Nations may be emboldened to escalate and provoke each other below the nuclear threshold. The United States needs to be ready for escalation control either militarily or by limiting its objectives. Limited nuclear war would be much more likely in an HPW and, as such, the United States will require a diverse and flexible set of conventional and nuclear capabilities to deter or defeat aggression, terminate a nuclear conflict, or restore intrawar deterrence. Forward deployments (both nuclear and conventional basing) would be reassessed in light of exactly which forward allies or bases were worthy of retaining.

To get there, the United States would need to dramatically shed its current *nuclear allergy*, which has become chronic over the past 25 years. Understanding and operating within an HPW may require a candid anticipation and acknowledgement of nuclear employment (or near-employment) by adversaries and increased attention to readiness for nuclear

operations. Recreating a widespread knowledge base about nuclear operations and concepts would return as a priority in an HPW.

Likewise, nuclear employment may be required to reestablish intrawar deterrence or to deescalate conflict. Anticipating nuclear employment as all-too-thinkable in an HPW will be important to avoid being manipulated or exploited by adversaries or allies. To paraphrase Winston Churchill, Americans are inclined to “think about the unthinkable” only after we have exhausted all other alternatives. Failing to correct this tendency would come at great cost.

Connected to a renewed attention to nuclear warfighting as an acceptable topic of conversation is a need for the United States to more carefully integrate conventional and nuclear forces, and to conduct corresponding military exercises. Limited nuclear war need not be exclusively nuclear; especially in a highly proliferated world, and escalation control may require a mix of both to indeed *control* escalation decisively.

Robust conventional forces may be even more important to stability and to escalation, given the potentially increased prevalence of sub-nuclear conflict. U.S. deterrent capabilities in an HPW must include a full spectrum of nuclear and nonnuclear weapons that can deter, defeat, and defend. Should missiles remain a preferred nuclear delivery vehicle, regional missile defenses could furthermore contribute to stability. In short, the United States and other major nuclear powers may need to maintain substantial conventional forces to police their respective spheres and dominate escalation by minor or weak nuclear powers. Having the flexibility to respond overwhelmingly with either nuclear or conventional forces, or some combination thereof, would be important for escalation control or dominance. An HPW marked by stability may not therefore be one in which the United States could shirk defense budgets and rely more heavily on nuclear forces. Relative conventional superiority will likely remain vital to U.S. security and global stability in an HPW, especially in relation to minor and weak nuclear powers.

Deterrence will also be more complicated, requiring greater efforts to tailor it to regional circumstances. As Keith Payne writes:

Defense planners concerned about deterrence can no longer afford the luxury of concentrating primarily on one enemy. The U.S. military capabilities suited to deterring across a wide spectrum of challengers may be quite varied with regard to both the type of force-use threatened and the targets selected. This will be the case because of the likely differences in the context involved, opponents’ goals and intentions, their respective assessments of utility and their estimates of U.S. credibility, and because different opponents will have different incentives driving the prospective provocation of the United States. The U.S. deterrent threat must be sufficiently flexible to speak to all to these particular opponents and incentives.<sup>63</sup>

New entrants to the nuclear club may not have the same understanding of nuclear deterrence as the United States either because of a lack of education, legitimate differences in opinion, or strategic culture. The United States will have to be clear in explaining to new

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<sup>63</sup> Keith B. Payne, *Deterrence in the Second Nuclear Age* (Lexington: University Press of Kentucky, 1996), 129.

states how it views nuclear weapons and deterrence and it may behoove the United States to facilitate this kind of conversation between the new nuclear states—although there is no guarantee of success. Deterrence has always needed to be tailored, but the tailoring of deterrence in an HPW will be both more important and more difficult.

In the interest of stability, the United States in an HPW would want to embark on a different kind of arms control—not oriented toward reductions or disarmament, but rather the more old-fashioned type of armed control. Nuclear states may instead choose to self-regulate the types of nuclear weapons deployed, limit their yields, and engage in dialogue about nuclear signaling, largely with a view to stemming or controlling escalation.

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## Areas for Further Research

This study has attempted to articulate the contours of how a highly proliferated world (HPW) might function, its significance for key deterrence concepts, and its implications for the United States. Thought experiments like this are designed to stimulate the imagination, to avoid strategic surprise, and to tease out unexpected questions. This study hardly answered all the questions it raised, however, and significant opportunities for further research present themselves.

The specter of an emerging HPW should in the first instance encourage continued investigation of the unique role of the United States in the strategic environment of today and the near future. Most especially it should consider its relations with allies under its nuclear umbrella. Several choices currently facing the United States could contribute to or help mitigate the emergence of this HPW. Will the United States continue to embrace a national security strategy based on global reach and engagement, or will global power projection be perceived as simply too costly? U.S. retrenchment and the prospects for seeking another peace dividend can be appealing, but the long-term implications could be both disruptive and dangerous. While much has changed from the first nuclear age to the second, the U.S. outlook on counterproliferation and nonproliferation continues to be shaped by the Cold War.

Should extended deterrence fail, or be allowed to fail, the second- and third-order implications could be profoundly disruptive to the principles of international order that have been taken for granted. Ideas about a rules-based international order, sovereign equality of all states, nonproliferation as an ideal, and the United States as a backstop against chaos could fall apart. What does the world look like in which the United States not only tolerates but potentially encourages the proliferation of nuclear weapons to those it currently counts as allies and partners? How do Russia and China react and take advantage of those circumstances? What are some possible alternative forms of international order that could come to supplant the postwar system we currently more or less enjoy?

Another rich area for exploration is the range of new alliance structures and nuclear-sharing or nuclear-cooperation arrangements that might emerge to fill the gap in the U.S. extended deterrence umbrella. This area, too, would benefit from a study of the early Cold War, including how NATO began to embrace its nuclear identity first with the United States, then with Britain and France, and with the hosting of U.S. nuclear weapons by numerous NATO allies. "Multinational nuclear forces" might enjoy a return of sorts, and extended deterrence might pop up between and among new nations altogether.

Force posture would remain a significant variable in an HPW. How will variances in force postures interact to effect stability and deterrence? How will current nuclear powers alter

their command and control policies in an HPW to better defend against regional adversaries? Other nuclear powers in an HPW would view nuclear employment through the prism of their own strategic cultures, not our own. How will their different understandings of nuclear weapons affect deterrence and stability? How could they lead to strategic surprise, or defeat? In particular, a more extensive analysis could be done for U.S. nuclear force posture and capabilities in an HPW.

Norms and expectations require attention too. Just as an HPW will not develop overnight, governments may be slow to recognize it when it does develop; indeed, there may be powerful incentives to deny its emergence, even when it becomes obvious. As such, it follows that there may be several stages leading up to a fully developed HPW. Norms may “hang over” from a previous period and affect decisionmaking.

Deterrence is neither automatic nor easy, and neither is nonproliferation. Nonproliferation and other norms are likely to retain a kind of inertia, and the “hangover” effects could in turn shape or even accelerate the path to an HPW. How will regional rivals react to a neighbor proliferating? These questions are especially acute for states that are allied to the United States. How will U.S. allies use their alliance relationship to stop a rival from proliferating? How will multilateral alliances such as NATO react to one of its members going nuclear?

International law is law made by and for all nations. The legal paradigms of an HPW would therefore likely be changed and adapt to new geopolitical realities. The prospect of neighboring states acquiring nuclear weapons could prompt major nuclear powers to undertake preventive war to preclude their emergence. Major nuclear powers may become the world’s policemen in a way not formally embraced for many decades. Instead of a world defined by sovereign equality of all states, something like spheres of influence might return to shape and define the international order.

An area of inquiry for attention to nuclear readiness and overcoming the nuclear allergy might be to attempt to update a book that will turn 30 in 2017. In 1987, the Brookings Institution published a book containing numerous detailed analyses, titled *Managing Nuclear Operations* (edited by Ashton Carter). It is unclear that such an updated version of this book could be written today among the academic and policy community with the same depth and detail. The exercise of attempting to do so could both help assess and recreate the knowledge base about nuclear operations and concepts.

This study also reaffirms that it is, indeed, hard to think the unthinkable. The tabletop exercise involving ambiguous nuclear employment by North Korea (a demonstration shot at sea) generated unexpected outcomes including the denial that the nuclear taboo had been broken. The players indeed demonstrated a remarkable propensity to deny that nuclear use had occurred. This tendency toward denial of nuclear use more broadly could well be exploited by adversaries in the service of their political objectives, such as by manipulating the United States or coercing other states into backing down. Anticipating the range of nuclear coercion or blackmail scenarios may well be helpful to draw red lines to adversaries as well as to ourselves. Responses must be considered in advance, for ambiguous nuclear

employment such as electromagnetic pulse or other demonstrations.<sup>64</sup> A study of U.S. strategic culture as it pertains to aversion or denial of nuclear use could well identify some possible paths to inoculate ourselves from such blackmail.

Finally, the tabletop exercises gave the study team and working groups insights and observations that could be further explored. Additional exercises could be conducted on a wider range of scenarios pertaining to an HPW. These might include additional nuclear actors, including in Europe. Longer tabletop games would also be helpful to further tease out the prospects of instability, escalation, and strategic ambiguity. The working group further recommended that the study team consider creating crisis scenarios in a more nuclear “use-tolerant” strategic environment to explore war termination and escalation control during or after nuclear employment.

The path to an HPW may take years or decades to develop, and it may not emerge at all. After all, some 56 years have passed since John F. Kennedy predicted as many as 20 nuclear powers by 1964.<sup>65</sup> But of course past nonproliferation successes are no guarantee of success in the future. The future is not written, and to again quote Andrew Marshall, “any realistic strategy must take account of the possibility that these efforts will fail and that the future world will have many more nuclear powers, some of whom would employ weapons in ways very different from how we have tended to focus on.”<sup>66</sup>

We hope that the HPW considered here will never emerge, but that must not keep us from thinking about it. As Herman Kahn once remarked, “when our reluctance to consider danger brings danger nearer, repression has gone too far.”<sup>67</sup>

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<sup>64</sup> Bob Work and Paul Selva, “Revitalizing Wargaming Is Necessary to Be Prepared for Future Wars,” *War on the Rocks* (blog), December 8, 2015, <http://warontherocks.com/2015/12/revitalizing-wargaming-is-necessary-to-be-prepared-for-future-wars/>.

<sup>65</sup> “There are indications because of new inventions, that 10, 15, or 20 nations will have a nuclear capacity, including Red China, by the end of the Presidential office in 1964. This is extremely serious. . . . I think the fate not only of our own civilization, but I think the fate of world and the future of the human race, is involved in preventing a nuclear war.” John F. Kennedy (Third Nixon-Kennedy Presidential Debate, October 13, 1960) <http://carnegieendowment.org/2003/11/17/jfk-on-nuclear-weapons-and-non-proliferation>.

<sup>66</sup> Marshall, “Strategy as a Profession in the Future Security Environment,” 635.

<sup>67</sup> Kahn, *Thinking about the Unthinkable*, 20.

# Appendix 1

## Comparison of Past Thought Experiments

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In creating its deductive framework for what a highly proliferated world (HPW) might look like and how it might function, the CSIS study team examined the literature and identified past “*gedanken*” or thought experiments tackling this similar issue. By deconstructing these theories from their underpinning assumptions, the study team narrowed down characteristics and questions about how a post–2030 HPW might work. Some of these factors include nuclear force structure, perceptions of adversary capability, alliance structures and alliance behavior, and the pace of proliferation. Such a comparative analysis also better situates the assumed world constructed by the CSIS study team.

Thought experiments for how an HPW might function have been undertaken much less frequently than analysis about the drivers of proliferation and the means to stem it. Nevertheless, there have been a few notable analyses from the past worth examining. These include thought experiments by Herman Kahn in 1962, Kenneth Waltz in 1995, Albert Wohlstetter in 1976, and a later thought experiment by Herman Kahn from the 1984 book *Thinking about the Unthinkable in the 1980s*.

### Why More May Be Better (1995)

Kenneth Waltz’s provocative essay *Why More May Be Better* stands as one of the best-known defenses of the merits of nuclear proliferation. Waltz envisions a possible future of “fifteen to eighteen” nuclear armed states. Waltz argues that “nuclear weapons make wars hard to start,” and concludes that “the gradual spread of nuclear weapons is more to be welcomed than feared.” Largely channeling the notion of a stable balance of terror championed by economist Thomas Schelling, Waltz bases his assertions of stability in an HPW on a belief that the presence of nuclear weapons affects the behavior of states in similar and predictable ways. Waltz’s case that nuclear weapons almost invariably lend stability to the international system is predicated on several key assumptions.

1. *The pace of horizontal proliferation will remain roughly steady.*<sup>68</sup> A key factor in Waltz’s stable HPW is the slow pace of proliferation, with “a new member occasionally

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<sup>68</sup> Sagan and Waltz, *The Spread of Nuclear Weapons*, 3.

joining the nuclear club."<sup>69</sup> This slower pace would in theory allow the international system to more easily digest new nuclear states, minimizing systemic shocks.

2. *It is unlikely that unstable states will initiate nuclear projects.*<sup>70</sup> In this instance, Waltz defines "unstable" as "referring to states undergoing internal political upheaval." Waltz bases this assumption on the technical challenges and commitment required to acquire nuclear weapons, saying that "the more unstable a government, the shorter the attention span of its leaders." Waltz acknowledges that nuclear states may become unstable, but "see(s) little reason . . . to fear that that one faction or another in a less-developed country will fire atomic weapons in a struggle for political power."
3. *Not much is required to deter.* Waltz contends that "a low probability of carrying a highly destructive attack home is sufficient for deterrence."<sup>71</sup> Only three criteria, according to Waltz, are necessary for an effective deterrent. These are: 1) ensuring that at least a small part of a nuclear force can survive a first strike; 2) these forces must not require "early firing," to insure against false alarms; and 3) a reliable command and control apparatus.<sup>72</sup> According to Waltz, achieving these requirements is relatively easy for even small states.<sup>73</sup>
4. *Nuclear weapons make conventional imbalances irrelevant.* In addition to asserting that nuclear force imbalances beyond attaining the aforementioned requirements for deterrence have little or no impact on stability, Waltz also says that "small conventional forces are equivalent to large conventional forces because large forces cannot be used against a nuclear power. . . . Nuclear weapons negate both nuclear and conventional advantage."<sup>74</sup>
5. *Nuclear weapons provide certainty, certainty is stabilizing.* Waltz writes that "certainty about the relative strength of adversaries . . . makes war less likely."<sup>75</sup> Nuclear weapons, he argues, provide this certainty, giving two adversaries a clear vision of the devastation that would result from conflict. "Many wars might have been avoided had their outcomes been foreseen." He goes on to say that "Nuclear weapons make military miscalculation difficult and politically pertinent prediction easy."

Waltz's conclusions differ quite dramatically from the findings of this study. In particular, Waltz's assumptions about the capacity of nuclear weapons to neutralize relative power imbalances between states of different sizes and military capability did not play out in either tabletop exercise, and was rebuffed by the preponderance of opinion in the study's working group. On the contrary, nuclear thresholds, even during crises, were found to be quite sturdy, thus raising the importance of conventional capabilities.

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<sup>69</sup> Ibid.

<sup>70</sup> Ibid., 11.

<sup>71</sup> Ibid., 22.

<sup>72</sup> Ibid., 20.

<sup>73</sup> Ibid., 20–22.

<sup>74</sup> Ibid., 32.

<sup>75</sup> Ibid., 9.

Moreover, Waltz's criteria for stability in an HPW rests on widespread transparency, with countries having a good understanding of one another, and of the risks of escalation against a nuclear armed state. By contrast, nuclear powers sometimes favor ambiguity and secrecy, and others may exaggerate their capabilities. North Korea, for example, tends to inflate perceptions of its nuclear capabilities to the world, while Israel favors ambiguity.

## Thinking about the Unthinkable (1962)

In *Thinking about the Unthinkable* (1962), Herman Kahn's thought experiment envisions a world of up to 50 nuclear powers by the year 2000. Kahn sees widespread proliferation as a highly destabilizing development, writing that the "uncontrolled diffusion of nuclear weapons is more likely to make things worse than better."<sup>76</sup> The assumptions upon which Kahn appears to base this conclusion include:

1. *Greater opportunities for nuclear employment.* With significantly more nuclear powers, a nuclear shadow will extend over far more conflicts, which will cause those conflicts to turn violent more quickly. Kahn predicts that "troublesome international problems, such as disputed frontiers . . . can give rise to local games of chicken. . . . [I]t is not unreasonable to believe that every so often someone would miscalculate . . . and actually unleash a nuclear war."<sup>77</sup> Kahn also argues that nuclear weapons are much less difficult to operate and employ than conventional forces, citing the challenges of "mobilization, transportation, logistics, etc. . . this time and effort means that there are built-in safety features on the use or threat of violence."<sup>78</sup> These conventional constraints, argues Kahn, would be less prevalent in a "world which is armed to the teeth with nuclear weapons."<sup>79</sup>
2. *Nations are likely to act more aggressively.* With much higher stakes in international disputes, Kahn estimates that there will be an imperative for decisionmakers to act first, noting that "while few would wish to be either executioner or victim, most would prefer the first role to the second. A world in which reciprocal fear of surprise attack is ever present, is also a world in which there would be little stability."<sup>80</sup>
3. *More nuclear actors mean a greater chance of accidental war.* With greater numbers of nuclear powers comes more opportunities for human error. Kahn writes that "the possibility of unauthorized behavior, irresponsibility, misunderstanding of orders, or lax discipline inevitably increases. Mistakes can occur and the probability of most mistakes would increase if the military or political organization were weak or slipshod."<sup>81</sup>

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<sup>76</sup> Kahn, *Thinking about the Unthinkable*, 222.

<sup>77</sup> *Ibid.*, 223.

<sup>78</sup> *Ibid.*, 222.

<sup>79</sup> *Ibid.*

<sup>80</sup> *Ibid.*, 224.

<sup>81</sup> *Ibid.*, 224–25.

4. *More chances for manufactured casus belli.* With more widespread possession of nuclear weapons, large states would face more threats, even from much smaller nations—threats that the large powers may wish to alleviate through military action. However, to avoid cultivating a reputation for being needlessly aggressive, large nations make excuses, or manufacture crises, before attacking smaller nations. In an HPW, Kahn predicts that “when the small nations have acquired nuclear weapons, however, not only does the danger of accidental incidents go up sharply but the dangers of ‘arranged accidents’ also increase.”<sup>82</sup>
5. *Increased threat of nonstate actors acquiring nuclear weapons.* Kahn predicts that with the diffusion of technology, the cost of a nuclear weapon could plummet to \$100,000 (\$788,000 in 2016 dollars), well within reach of nonstate actors. He further suggests that the necessary equipment to create nuclear weapons would likely be dual-use, or “almost all of their components will have peaceable ‘relatives’ and therefore may become generally available.”<sup>83</sup>

Kahn’s world of 50 nuclear powers in some ways resembles this study’s assumed world in its penchant for instability, but differs in others. Kahn posits a much lower threshold for nuclear employment, while this study found that the nuclear threshold would remain more pronounced, with states having a greater propensity to engage in conflict below the nuclear threshold, believing (perhaps in vain) that their nuclear arsenals will deter escalation. Also unlike this study’s conclusions, which find continued salience of conventional superiority in an HPW, Kahn estimates that nations will begin to neglect their conventional capabilities over time and rely more exclusively on nuclear deterrence. Like Kahn, however, the CSIS study team also assumes that an HPW would be more vulnerable to the associated risks of miscalculation and miscommunication.

## Moving Toward Life in a Nuclear Crowd (1976)

In 1976, Albert Wohlstetter envisioned a world of 30 to 40 nuclear-armed states, a mix of large and small powers. Unlike Waltz, Wohlstetter’s postulated world exhibits greater uncertainty, and less stability. The following are some of the principal assumptions Wohlstetter makes in coming to his conclusions:

1. *There exists a cyclical tension between the desires of great powers to avoid conflict with one another and nonproliferation.* Wohlstetter suggests that absolute avoidance between great powers requires the elimination of security guarantees to third parties where great power competition exists. This bias toward shrinking away from providing security assurances, in turn, creates the conditions for further nuclear proliferation. Nevertheless, the great powers do have interests in third areas that will compel them to engage with these regions (or arguably they would not be great powers).
2. *Building an invulnerable second-strike capability is easier said than done.* A major complicating factor to deterrence in an HPW, argues Wohlstetter, is the challenge of

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<sup>82</sup> Ibid., 227.

<sup>83</sup> Ibid., 226.

building a convincingly secure second-strike capability. Land-based forces, particularly if limited in number, could be vulnerable to a disarming strike with either nuclear or precision-guided conventional weapons.<sup>84</sup> Small submarine-based deterrents may also be vulnerable to a great power with sophisticated antisubmarine warfare capabilities. Furthermore, even capable middle-sized powers such as Japan would face resource constraints not just at the outset of nuclear acquisition, but in keeping pace with great power rivals as well. "The medium-sized power may face continued problems of force obsolescence," Wohlstetter contends.<sup>85</sup>

3. *Deterrence is not universal—deterrence will function differently between states of different sizes and nuclear capabilities.* Wohlstetter dismisses the notion that a smaller nuclear power with a minimum deterrent capable of "tearing off an arm" of a much larger power gives them the ability to deter that larger power.<sup>86</sup> "A super power," he argues, "would have the ability to inflict overwhelming destruction on the population or wealth of the medium-sized powers." As such, he concludes that any threat of a limited attack by a smaller nation would not be viewed as credible in the face of an undeniable threat of existential devastation by a larger power.

While he acknowledges that a "limited retaliatory capability in the hands of a medium sized power would give a super-power adversary some cause for concern," he argues that the effect would be "incremental . . . if everything else were equal."<sup>87</sup>

4. *Alliances add complexity to deterrence.* Wohlstetter highlights the importance of large state behavior when determining stability between smaller, regional rivals. Should a large nuclear power see enough interest in a particular region to maintain a security assurance over a regional nuclear-armed power, this could greatly upset the regional balance vis-à-vis the other nuclear-armed powers in the region. Nonetheless, Wohlstetter is bearish on the continuation of explicit great-power assurances in a highly proliferated world, stating that there is "an increasing question as to which great powers will be as prepared in the future as in the past to provide alliance guarantees to nations in a nuclear crowd."<sup>88</sup>
5. *Power disparities will remain between nuclear powers.* Given his views that nuclear weapons may not be the great "levelers" that Waltz asserts, Wohlstetter contends that "world power relationships will not be wholly transformed. . . . [I]t is difficult to find evidence that the British, French, and Chinese nuclear programs have radically added to the effective power of these countries . . . and even greater constraints will be faced by smaller nuclear forces than these."

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<sup>84</sup> Wohlstetter et al., *Moving toward Life in a Nuclear Armed Crowd?*, 120. This point may be even truer today than when he made it in 1976.

<sup>85</sup> Ibid.

<sup>86</sup> Pierre Gallois, *The Balance of Terror: Strategy for the Nuclear Age* (Cambridge, MA: Riverside Press, 1961).

<sup>87</sup> Wohlstetter et al., *Moving toward Life in a Nuclear Armed Crowd*, 118.

<sup>88</sup> Ibid., 149.

6. *Small powers with vulnerable forces have an incentive to use nuclear weapons "in very restrained ways."*<sup>89</sup> This assumption ties in closely to Wohlstetter's belief that great powers will be less deterred by smaller forces that they could conceivably destroy preemptively. With this in mind, small powers may be more likely to use their more vulnerable deterrents in ways that do not invite such preemption on their forces or population centers. Although Wohlstetter is not explicit in his definition of a "restrained" nuclear use, one can presume this refers to a limited nuclear demonstration, or to threaten a smaller strike on the forward-deployed military forces of a great power.

Wohlstetter's basic assumptions about the working of a "life in a nuclear armed crowd" most closely reflects those that this study found to be most applicable to a post-2030 world of 15+ nuclear powers. Contrasting with Waltz in particular, Wohlstetter's nuclear crowd takes into account greater levels of strategic variation among its players, including differences in force structures and capabilities, geographies, the existence of great power alliances, and the behavior of those great powers.

## Thinking about the Unthinkable in the 1980s (1984)

In his posthumously published 1984 book *Thinking about the Unthinkable in the 1980s*, Herman Kahn engages in another thought experiment, this time imagining an HPW in the year 2000. This HPW is composed of seven "great powers" armed with nuclear weapons, with an array of smaller "two-bit" countries armed with less sophisticated nuclear forces.<sup>90</sup> In this postulated world, the seven great powers would be among the wealthiest and most technologically advanced, with "trillion dollar gross domestic products."<sup>91</sup> The United States and the Soviet Union would still be the world's leading powers, but they would "no longer be disproportionately dominant."<sup>92</sup>

In contrast to Kahn's *Thinking about the Unthinkable* (1962), the 1980s thought experiment is more optimistic about prospects for stability, suggesting that this arrangement would make the world "less prone to cataclysmic nuclear war, and even nuclear crises" than the bipolar U.S.–Soviet competition.<sup>93</sup> This optimism is based on several key assumptions, particularly pertaining to nuclear force postures and alliance behaviors.

1. *Nuclear great powers would ultimately favor doctrines that emphasize "restraint in the use of nuclear threats, limitation in the conduct of nuclear war, and defense against nuclear attack."* These powers would posture their forces to be able to conduct limited nuclear attacks, rather than relying on threats of massive, counter-value retaliation to deter adversaries. "The emergence of a multipolar world" would probably give a strong impetus to the adoption of more sensible nuclear weapon

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<sup>89</sup> Ibid., 163.

<sup>90</sup> Kahn, *Thinking about the Unthinkable in the 1980s*, 200.

<sup>91</sup> The great powers that Kahn predicted having this status were the United States, Japan, the Soviet Union, China, Germany, France, and Brazil. Kahn also predicts a group of second-tier great powers that includes India, the United Kingdom Mexico, Italy, and South Korea. Ibid., 201.

<sup>92</sup> Ibid., 200.

<sup>93</sup> Ibid.

postures by the United States and other countries.”<sup>94</sup> An extension of such “sensible” policies, the great powers are assumed to embrace the deployment of strategic defenses, such as missile defenses, to keep themselves undeterred by the limited nuclear arsenals of the lesser “two-bit” nuclear countries. “The multiplicity of both great and small nuclear powers,” however, “would increase the need for strategic defenses.”<sup>95</sup>

2. *Fluid alliances are stabilizing.* Here a multipolar world of nuclear great powers is assumed to permit a system of shifting, temporary alliances that could offset aggressive behavior by one, restoring the balance and status quo, similar to the European system that kept Europe at peace from the mid-nineteenth century until World War I.<sup>96</sup>

Despite coming to a different conclusion concerning the prospects for stability of an HPW, the areas of focus in the 1980s thought experiment are similar to those in this study, namely the emphases on the importance of nuclear force structure and alliance dynamics on determining the relative stability of a highly proliferated international system. However, where it finds stability in the shifting nature of alliances, this study finds that such ambiguity of alliance commitments increases the chances of strategic misinterpretation and risk. Moreover, while this study largely agrees with Kahn’s assessment that a nuclear force posture geared toward limited nuclear operations and strategic defenses would help provide greater deterrence credibility and thus strategic stability, it does not take for granted that new or legacy nuclear powers would come to this conclusion as a natural inevitability.

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For a comparison of these four views on the workings of an HPW, Table A1-1 illustrates how these theorists address the various aspects of an HPW.

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<sup>94</sup> Ibid., 203.

<sup>95</sup> Ibid.

<sup>96</sup> Ibid., 202.

**Table A1-1: Comparison of Past Thought Experiments of a Highly Proliferated World**

	<b>Waltz (1976)</b>	<b>Kahn (1962)</b>	<b>Kahn (1984)</b>	<b>Wohlstetter (1976)</b>	<b>CSIS-HPW(2016)</b>
<b>Nuclear Powers Postulated</b>	15–18+	50 capable by 2000	7 great powers plus many smaller ones.	30–40 powers	15+
<b>Threshold for Likely New Powers</b>	Stable states wishing to deter aggression and safeguard sovereignty.	Nations spending between \$100 million and \$1 billion on defense (1962 dollars).	Wealthy nations with high GDP, and rogue states.	Non- or marginally aligned states fearing abandonment.	States having lost faith in U.S. extended deterrence; countries vulnerable to U.S. power.
<b>Stability</b>	Highly stable.	Unstable.	Stable.	Unstable.	Unstable.
<b>Nuclear Force Posture</b>	Invulnerable second strike only requirement for effective deterrence; this is relatively easy to obtain.	Nuclear possession likely to make countries neglect conventional military capabilities.	Great powers will invest in defensive capabilities and flexible nuclear force postures to remain undeterred by smaller nuclear powers. Mutual assured destruction (MAD) policies will be shelved in favor of doctrines and postures that support nuclear restraint and limited nuclear conflict.	Critical factor in deterrence: great powers with superior military capability will be largely undeterred by smaller powers with vulnerable forces. Secure second-strike capability is difficult for small powers to obtain.	Nuclear readiness a key factor in deterrence. Rise of sub-nuclear conflict.
<b>Alliance Structures / Extended Deterrence</b>			Alliances will become fluid, shifting to maintain multipolar equilibrium.	Alliances remain, but may be based less on security guarantees, and more on material support, technology transfers. Security guarantees will become more explicit and limited.	More explicit and limited, but different structures may emerge.

<p><b>Deterrence Dynamics between Great Nuclear Powers and Minor / Weak Nuclear Powers</b></p>	<p>Great powers less likely to engage in conflict outside vital interest areas, fear of nuclear escalation primary concern.</p> <p>Having achieved security through deterrence, small states will be less aggressive and exhibit great caution in dealings with other nuclear armed states.</p>	<p>Reciprocal fear of surprise attack likely to create an impetus for states to act first.</p>	<p>Great powers will likely adopt strategic defenses to remain undeterred by minor or weak nuclear powers.</p>	<p>Large states likely to remain engaged in "third areas" of interest, but with more limited objectives. Overriding objectives would be to avoid conflict with other great powers, will be only marginally deterred by smaller nuclear powers. Small states will have an incentive not to overplay their hand.</p>	<p>Relative power disparities between great and minor nuclear powers will remain; prospects of instability will remain with much higher stakes.</p> <p>Deterrence based on flexibility of nuclear and conventional forces and understanding of whom one is trying to deter.</p>
<p><b>Potential for Conflict and Nuclear Employment</b></p>	<p>Much less; states will perceive the potential cost of conflict to be greater than gains. Uncertainty would be minimized—nuclear weapons remove uncertainty from the consequences of armed conflict.</p>	<p>Greater chance of conflict, increased potential for accidental war, and even mundane interstate conflict would carry risk of nuclear escalation.</p>	<p>Cataclysmic nuclear war less likely, but risk of limited nuclear employment or exchange greater or unchanged.</p>	<p>Likelihood of nuclear employment greatest between smaller regional powers, emboldened by support of great power. Employment most likely to be limited.</p>	<p>Miscommunication and misperception significant source of instability in an HPW.</p> <p>Sub-nuclear conflict more likely as nuclear powers become emboldened by own nuclear deterrent. Stability aided by clear articulation of state's vital areas of interest.</p>

# Appendix 2

## Tabletop Exercise Force Tables

Prior to game play, each player was given a force table of his or her respective team’s strategic and conventional forces along with an “intelligence report” of perceived capabilities of the other players. Below are the force tables each team received for its own forces.

### East Asia TTX Force Tables

<b>Table A2-1: United States Summary of Strategic Forces (East Asia TTX)</b>				
The United States maintains 1,000 nuclear warheads deployed on ICBMs, SLBMs, and heavy bombers with cruise missiles.				
<b>Strategic Forces Table</b>				
Missile	Quantity	Range	# of Nuclear Warheads	Launchers
ICBMs	400	15,000 km	400 (350 KT)	400
SLBMs	250	12,000 km	250 (100–300 KT)	N/A
Bombers	90	-	-	-
Gravity Bombs	100	N/A	100 (variable 0.3–300 KT)	N/A
LRSO (air launch cruise missiles)	200	2,500 km	50 (variable 0.3–300 KT)	N/A
<b>Air &amp; Missile Defense Systems</b>				
The missile defense system can intercept 70–80% of the first 10 ICBM warheads fired at CONUS.				
<b>Summary of Conventional Forces Balance</b>				
1,000 troops in ROK. B-3 and B-2 stealth bombers deployed to Guam. Naval Forces: The 7th fleet is based in Pearl Harbor, Hawaii. The fleet consists of one aircraft carrier and carrier wing of F-35s and supporting destroyers and cruisers, and attack submarines.				

**Table A2-2: South Korea Summary of Strategic Forces**

South Korea has a small nuclear arsenal of 10 KT nuclear warheads that it can mount to either a limited number of SRBMs or cruise missiles. Its missile arsenal is believed, however, to be accurate enough to strike hardened underground targets.

**Strategic Forces Table**

Missile	Quantity	Range	# of Nuclear Warheads	Launchers
SRBMs	40	950 km	40 (10 KT)	20
Cruise Missiles	100	1,000 km	20 (variable 0.2–20 KT)	N/A

**Air & Missile Defense Systems**

Missile defense system can intercept 60–70% of the first 50 missiles fired.

**Summary of Conventional Forces Balance**

Land forces are fewer than North Korean forces but are qualitatively superior. Much more capable air and naval forces than North Korea, but similar in capability to Japan’s military. Five submarines have the capability to launch conventional SLCMs.

**Table A2-3: North Korea Summary of Strategic Forces**

North Korea possesses fewer road-mobile ICBMs capable of hitting cities in the western part of the United States. Its larger medium-range missile arsenal is mobile, and is capable of covering any target in Japan. Its SRBMs can reach any target in South Korea and significant amounts of its artillery are pointed at Seoul continuously, allowing them to be fired quickly. The short- and medium-range missiles are also road-mobile and difficult to find once dispersed.

**Strategic Forces Table**

Missile	Quantity	Range	# of Nuclear Warheads	Launchers
ICBMs (mobile)	10–14	10,000 km	5–20 (100 KT)	5–10
MRBMs (mobile)	95–110	1,500 km	60–120(<50 KT)	45–65
SRBMs (mobile)	585–630	500–900 km		90–110

**Air & Missile Defense Systems**

Significant AAA capabilities with limited integrated air defense system (IADS). Can target and destroy very limited number of advanced aircraft.

**Summary of Conventional Forces Balance**

Quantitatively superior, but qualitatively inferior land forces.  
Large fleet of submarines and small surface vessels armed with ASCMs.  
Very small Air Force with around 25 4th-generation Mig-21s.  
About 12,000 artillery pieces aimed at Seoul and military targets in northern South Korea.

**Table A2-4: Japan Summary of Strategic Forces**

Japan deploys submarine- and sea-launched cruise missiles with variable-yield nuclear warheads. The number of submarines, and even which submarines are nuclear armed, is a closely held state secret.

**Strategic Forces Table**

Missile	Quantity	Range	# of Nuclear Warheads	Launchers
Cruise Missiles	500 SLCM	1,000–2,500 km	75 (variable 1–100 KT)	4 submarines

**Air & Missile Defense Systems**

The missile defense system can intercept 70–80% of the first 50 missiles fired.

**Summary of Conventional Forces Balance**

Superior air and naval capabilities to North Korea.  
Slight qualitative edge over China, numerically inferior.  
Sophisticated ASW capabilities.

**Table A2-5: China Summary of Strategic Forces**

Chinese nuclear weapons have variable-yield warheads and are deployed on road-mobile systems through a network of tunnels. While the quantity of both missiles and warheads is unclear due to unwillingness to enter arms-control negotiations, it is clear that they have a survivable second-strike capability. In addition, they deploy six SSBNs with 20 long-range SLBMs that conduct deterrent patrols in local waters. Their medium-range missiles are capable of hitting targets all over Japan from locations deep in Chinese territory. Their substantial short-range missile arsenal can also be maneuvered to target U.S. forces based on Okinawa. Some Chinese MRBMs are capable of targeting aircraft carriers and other large naval vessels.

**Strategic Forces Table**

Missile	Quantity	Range	# of Nuclear Warheads	Launchers
ICBMs	80–120	12,000–15,000 km	100	50
SLBM's	120	8,000 km	120	6 submarines
MRBMs	200	1,500–4,000 km	100	100
SRBMs	1,750	1,000 km	50	500
Cruise Missiles	1,000	900 km	50	N/A

**Air & Missile Defense Systems**

The missile defense system can intercept 50–60% of the first 50 missiles fired.

**Summary of Conventional Forces Balance**

Emphasis on anti-access/area denial capabilities.  
Dominant military power in Asia-Pacific.

## Middle East TTX Force Tables

<b>Table A2-6: United States Summary of Strategic Forces (Middle East TTX)</b>				
In 2030, the United States deploys 1,000 nuclear warheads deployed on ICBMs, SLBMs, and heavy bombers with cruise missiles.				
<b>Strategic Forces Table</b>				
Platform	Quantity	Range	# of Nuclear Warheads	# of Platforms
B-21 w/ LRSO	200	2,500 km	50 (variable 0.3–300 KT)	N/A
B61 Gravity Bomb (in Europe)	100	N/A	100 (variable 0.3–300 KT)	N/A
SSBN w/ Trident II	250	12,000 km	250 (100–300 KT)	N/A
Minuteman III ICBM	400	15,000 km	400 (350 KT)	400
<b>Air &amp; Missile Defense Systems</b>				
Homeland: Missile defense capable of intercepting 80–90% of first 10 ICBMs fired.				
Regional: Intercept 90% of first 30 missiles fired at U.S. military bases.				
Fleet defense: Kinetic and directed-energy air defense systems have made U.S. naval forces highly resilient to antiship missile attack.				
<b>Summary of Conventional Forces Balance</b>				
Nuclear-capable F-35 squadron based in al-Dhafra air base, UAE (variable-yield gravity bombs in Europe, transfer to Gulf possible).				
1 carrier wing of F-35s, conventional munitions.				
Guided missile destroyer with conventional SLCMs / ASCMs.				

**Table A2-7: Saudi Arabia Summary of Strategic Forces**

Saudi Arabia is believed to have 5–15 nuclear weapons mounted on its DF-50 IRBMs recently acquired from China.<sup>97</sup>

**Strategic Forces Table**

Missile	Quantity	Range	# of Nuclear Warheads	Launchers
DF-50 IRBM	10	2,000 km	10 (50KT)	10
CSS-5 (DF-21) MRBM	45	1,750 km	0	15 mobile transporter erector launchers (TELS)

**Air & Missile Defense Systems**

Missile defense capable of intercepting 70–80% of first 50 missiles.

**Summary of Conventional Forces Balance**

Small advantage over Iran in conventional air power. Inferior naval capabilities to Iran. Saudi Arabia has GMLRS with an effective range of 130 km.

**Table A2-8: Iran Summary of Strategic Forces**

Iran’s nuclear-tipped ICBMs can be launched by six mobile launchers with accuracy and range capable of striking cities as far as the U.S. East Coast. The bulk of Iran’s nuclear arsenal is deployed on its fleet of medium-range Emad ballistic missiles. These medium-range missiles can strike most of Europe, Israel, and the GCC. Iran’s 500 short-range missiles can strike targets in coastal areas in Saudi Arabia, Qatar, and the UAE, including U.S. military installations.

**Strategic Forces Table**

Missile	Quantity	Range	# of Nuclear Warheads	Launchers
ICBMs	12	12,000 km	12 (80 KT)	6 mobile TELs
IRBM / MRBMs	250	2,000 km	70 (10–100 KT)	75 mobile TELs
SRBM (Scud)	500	300–800 km	0	100 mobile TELs
Qiam-2 (Bahrain) <sup>98</sup>	15	1,000 km	15	15 mobile TELs

**Air & Missile Defense Systems**

S-300 and S-400 systems can cause high attrition of combat aircraft in Iranian airspace.

**Summary of Conventional Forces Balance**

No significant advantage in air power over the GCC. Superior naval capabilities to the GCC, but inferior to the United States. Iran has 8,000+ short-range rockets in Lebanon (Hezbollah). Proxy forces in Bahrain have man-portable air defense systems (MANPADS).

<sup>97</sup> Speculative missile type.

<sup>98</sup> Speculative missile type.

**Table A2-9: Turkey Summary of Strategic Forces**

Turkey has a nascent nuclear program with 15 nuclear warheads of a small size (20 KT). The MRBM can strike most targets in Iran and Bahrain.

**Strategic Forces Table**

Platform	Quantity	Range	# of Nuclear Warheads	Launchers
Yıldırım-4 MRBM <sup>99</sup>	15	1,500 km	15 (20 KT)	15

**Air & Missile Defense Systems**

The missile defense system can intercept 60–70% of the first 50 missiles fired.

**Summary of Conventional Forces Balance**

F-35 squadron at base in Qatar, conventional air-launched cruise missiles (500-km range).

5,000 ground troops (infantry, light armored vehicles) at base in Qatar.

The Turkish navy operates two destroyers and two amphibious assault craft in Qatar.

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<sup>99</sup> Speculative missile type.

# About the Authors

**Clark Murdock** is senior adviser of the International Security Program at CSIS. Joining CSIS in January 2001, Murdock has completed studies on a wide range of defense and national security issues, including strategic planning, defense policy and governance, and U.S. nuclear weapons strategy and policy. He directed the four-phase study on Defense Department reform, *Beyond Goldwater-Nichols: USG and Defense Reform for a New Strategic Era*, which released reports in 2004, 2005, 2006, and 2008. Murdock is currently leading several “track two” dialogues on nuclear policy issues—one involving the United States, United Kingdom, and France, and the other involving the United States, South Korea, and Japan. He has also recently completed studies on methodological approaches to building force-planning constructs and on nuclear posture implications of U.S. extended deterrence and assurance. He is the principal author of *Improving the Practice of National Security Strategy: A New Approach for the Post-Cold War World* (CSIS, 2004) and *The Department of Defense and the Nuclear Mission in the 21st Century* (CSIS, 2008). He also coauthored *Revitalizing the U.S. Nuclear Deterrent* (CSIS, 2002) and *Nuclear Weapons in 21st Century U.S. National Security* (AAAS, 2008).

Before joining CSIS, Murdock taught military strategy, the national security process, and military innovation at the National War College. Prior to that, from 1995 to 2000, he served in the Office of the Air Force Chief of Staff, where, as deputy special assistant to the chief for long range planning, he helped develop a strategic vision for the 2020 Air Force. Then, as deputy director for strategic planning, he institutionalized the Air Force’s strategic planning process and spearheaded the development of new planning products. Before joining the Air Force Chief of Staff’s Office, he was special assistant to the under secretary of the Air Force, providing analytic support to the secretary and under secretary on broad issues of concern, including the future of air power and Air Force missions. Before joining the Air Force, Murdock served in the Department of Defense, where he headed the Policy Planning Staff in the Office of the Under Secretary of Defense for Policy and held responsibility for mid- to long-range analysis and planning on strategy and defense policy issues. Prior to joining the Department of Defense, he served for several years on the House Armed Services Committee as a professional staff member and as a senior policy adviser to then-Chairman Les Aspin. Murdock’s experience in defense planning and policy also includes service on the National Security Council as senior director for Africa affairs and in multiple roles in the Central Intelligence Agency. Before turning to government service, Murdock taught for 10 years at the State University of New York at Buffalo. He is an honors graduate of Swarthmore College and holds a Ph.D. in political science from the University of Wisconsin at Madison.

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