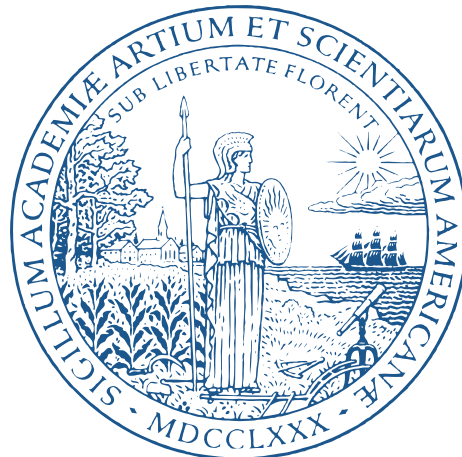


AMERICAN ACADEMY  
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MEETING THE CHALLENGES OF THE NEW NUCLEAR AGE

# Contemplating Strategic Stability in a New Multipolar Nuclear World

Robert Legvold



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There are today approximately 13,800 nuclear weapons in the arsenals of nine nuclear weapons-possessing states. A 300-kiloton warhead—a common size of the weapons held by the United States, Russia, China, Great Britain, and France—carries the destructive power of 300,000 tons of TNT. If one of them was detonated over the Pentagon, which is a scenario that Lynn Eden has described, the superheated air would create a rapidly expanding fireball one mile wide and 200 million degrees of heat at its center.<sup>2</sup> A half second later three quarters of a mile away at Pentagon City the streets would dissolve and metal surfaces would melt, and then a blast wave with 750 mile per hour winds would crush buildings and turn automobiles into fiery projectiles. Four seconds later the heat and blast would incinerate the Lincoln and Jefferson memorials, melt and crumple the aluminum exterior of planes at Reagan National Airport and set their interiors on fire. Three miles away the clothing of people outdoors would burst into flames and the exposed parts of their bodies would suffer third-degree burns. The detonation would create what is called, in something of an understatement, “a large area fire” with a radius between 3.5 and 4.5 miles producing hurricane force winds with temperatures above boiling (212 degrees Fahrenheit) and devastating an area 40 to 65 square miles—10 to 15 times wider than the 15-kiloton bomb used to destroy Hiroshima.

In a war leading to a nuclear attack on Washington, however, an adversary would not limit itself to using a single weapon but would likely target the city with multiple nuclear warheads, as the Soviet Union was prepared to do during the Cold War. The delayed and secondary effects in this case are potentially magnitudes greater. India and Pakistan have together between 270 and 290 nuclear warheads (many fewer than the 12,685 in the holdings of Russia and the United States). But were they to go to a large-scale nuclear war using most of them, as aspects of their current nuclear postures suggest they well might, the larger and more ramified consequences would dwarf the scenario described above. The radioactive fallout would drift as far as Australia; radiation contamination would poison the fresh waters of the rivers of the Himalayas reaching into China; and the dust, ash, and soot pumped high into the atmosphere would create a cloud that, if it reached the stratosphere, would not

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2. Lynn Eden, *Whole World on Fire: Organizations, Knowledge and Nuclear Weapons Devastation* (Ithaca, N.Y.: Cornell University Press, 2004), 15–37.

dissipate for several years, blocking sunlight and lowering temperatures that could eventually destroy crops and potentially cause the starvation of millions across Asia and beyond.<sup>3</sup>

Presumably, therefore, no nation's leadership wants even one of these weapons to be used, and, following this logic, one might imagine that planning for their use would be frowned upon. In reality, however, one proposition does not follow from the other. Every government that has these weapons does plan for their use. At the most paradoxical level they do so on the assumption that planning for their use is the best way to ensure that they will not be used. At a more practical level, they—at least the most advanced and richly armed—do so, because they believe that planning for a limited and discriminating use of nuclear weapons may be essential to prevent an act of aggression short of an unlikely large-scale surprise nuclear attack, and if it occurs to cut it short before nuclear escalation reaches the levels in the scenarios above.

The existence of nuclear weapons and the consequences were they to be used have for more than a half century prodded the two countries possessing most of these weapons to wrestle with the dilemma created: namely, how to ensure that your country's nuclear posture, the weapons comprising it and the strategy by which they would be employed, will deter major aggression by the other side, while somehow minimizing the risk that in a political-military crisis an unintended or unwanted resort to nuclear weapons may happen. Resolving the dilemma came to be thought of as achieving strategic stability *qua* crisis stability. Often added to the concept was the notion of arms race stability, that is, efforts to avoid a pointless and potentially destabilizing nuclear arms race.

By the time the Soviet Union and the United States began negotiating limits on their nuclear forces in 1969, the gold standard basis for strategic stability was thought to be when each had and would be able to maintain a capacity, after suffering a large-scale nuclear attack, to deliver an overwhelmingly destructive retaliatory strike with its remaining nuclear weapons. No imaginable gain could, therefore, match its price. Not everyone on either side, including some in significant policy-making roles, thought the concept made good sense, and remained wedded to the notion that escaping from the trap of mutual vulnerability should be the goal. Nor is it clear that the two governments embraced the concept at all times, or that, when either did, that it was more than a reconciliation with a reality as it was rather than the one they would have preferred.<sup>4</sup>

3. The notion of “nuclear winter” and its potential sequel of “nuclear summer” are controversial and the science disputed. Since 1990, however, a series of studies have been done testing a variety of computational models, all of them hampered by a number of indeterminate variables. Most assume a regional nuclear war in which fifty to one hundred 15-kiloton weapons (Hiroshima size) are detonated. A 2006 study concluded that five million tons of soot would be released, cooling temperatures over large areas of North America and Eurasia by several degrees, including most of the world's grain-growing regions, cooling that would last for years. A 2014 study projected ozone losses of between 20 and 40 percent over populated areas, increases in summer UV indices by between 30 and 80 percent over mid-latitudes, and a reduction of growing seasons by ten and forty days per year for five years.

4. The sole exception may have been the 1990 *Soviet-United States Joint Statement on Future Negotiations on Nuclear and Space Arms and Further Enhancing Strategic Stability* in which they pledged “to ensure strategic stability, transparency and predictability” by reducing their nuclear arms and working together “to improve the survivability” of their systems, to reduce “incentives for a nuclear first strike,” and to achieve “an appropriate relationship between strategic offenses and defenses.”

That was then. Today's nuclear setting poses challenges and creates complexities that leave the relevance of the Cold War concept of strategic stability questioned even in the core U.S.-Russian nuclear relationship and in its new adjunct, the increasingly fraught U.S.-China nuclear relationship. And, if that is true in these cases, what notion in other two-way and often three-way nuclear relationships can serve to approximate strategic stability between and among them? Or is the future an unregulated matrix of states locked in competitive relationships, preoccupied with preventing the other side or sides from achieving a nuclear advantage, constrained only by economics and the technological barriers not yet breached, and indifferent to standards, mechanisms, or concepts blocking the pathways to inadvertent nuclear war in a proliferating number of contexts?

The American Academy of Arts and Sciences as part of its project on "Meeting the Challenges of the New Nuclear Age" asked a small group of senior experts (see Appendix I) to wrestle with these questions. What follows is not a report of their deliberations, let alone a consensus document, but one person's exploration that addresses key themes raised during their discussions and exploits many of the insights generated by the participants.

## Defining the Concept

As Thomas Schelling, one of the principal authors of the original concept, wrote of this new age:

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>5</sup>

The question then follows: Can there be a standard or universal definition of strategic stability suitable for all relationships in all contexts? And this question leads to others: Need there be? If not, what range of circumstances would qualify as creating strategic stability? And is achieving any meaningful level of strategic stability feasible today?

Prior to any of these questions is another: what is strategic stability as a concept? Should it be thought of as an outcome, that is, a reality achieved? Or as a goal, that is, a policy objective? If a reality, is it essentially an interaction—a particular kind of interaction? As a policy objective, must it be a mutual objective?

The original concept, the seminal formulation of extraordinary thinkers like Bernard Brodie, Thomas Schelling, and Albert Wohlstetter, settled on a crucial but narrow principle. Strategic stability, they concluded, depended on a nuclear balance that blunted the desire of either side to use nuclear weapons first. Strategic stability was a nuclear stalemate, not just mutual deterrence at some level, but effective mutual deterrence, and that required a secure second (nuclear) strike capability able to survive and penetrate the other side's defenses

5. Thomas C. Schelling, "Foreword," in Elbridge A. Colby and Michael S. Gerson, eds., *Strategic Stability: Contending Interpretations* (Carlisle, PA.: U.S. Army War College Press, 2013), vii-viii.

with massive destructive force even after absorbing the first blow. In contemporary discussions of strategic stability, including the Academy's Working Group on Strategic Stability—discussions that usually privilege the U.S.-Russian nuclear relationship—mutual deterrence based on a secure second-strike capability remains the point of departure. It should, some in the group maintained, form the core of any meaningful concept of strategic stability. The State Department's International Security Advisory Board (ISAB), when in 2016 considering the requirements for “multilateral strategic stability,” took as its starting point the “U.S.-Russia Cold War construct” and then weighed ways of “extending strategic stability beyond” it “to include nuclear-weapons-possessing states more generally.”<sup>6</sup>

However, both the ISAB and the Academy's working group, as do most observers, muddy the picture when confronting the complexities of a many-sided, multidimensional nuclear world. The concept tends to be broadened to, as the ISAB put it, “reducing the risk of nuclear war.” Within the working group versions of that idea were repeated. It is being “on a trajectory where nuclear risks are receding,” said one member, where “we don't see ourselves on a path that makes nuclear war more likely.” Said another, it is a concept of “mutual restraint to avoid the first vital strike,” that is, any action—conventional or nuclear—“that triggers the escalatory process.” Several participants stressed that its essence should be steps blocking the pathways to inadvertent nuclear war. (Inadvertent in this context, by one long-standing definition, means doing something one does not regard as crossing a threshold, but that is perceived by an opponent as or potentially as crossing that threshold.)

Defined this way, the concept can be applied generally, but it leaves the hard questions unanswered. Viewed as a policy goal embraced by nuclear competitors, what concrete approaches, steps, or agreements would be required in its pursuit? Were it a reality—that is, a prevailing norm—would it represent stability achieved or rather progress whose effect was stabilizing, although not necessarily yet a stable balance?

As was apparent in the working group's discussion, the first of these questions simply resurfaces the issue of how differentiated the path to “reducing escalations risks” or blocking “the pathways to inadvertent nuclear war” needs to be when applied to multiple actors in multiple contexts. Within this universe the U.S.-Russian relationship remains a case apart, although one with increasing U.S.-Chinese parallels. At its core the notion of mutual assured deterrence as a secure second-strike capability persists, but it revolves around an increasingly unsettled and damaging set of conditions challenging the concept's adequacy or durability

They come in three forms. First, technological advances and the planned modernization of weapons stir fears that what undergirds a secure second-strike capability could be undermined. Russia once more, now joined by China, worries that the leap forward in remote sensing (earth-observation satellites, acoustic-gathering, artificial intelligence, and data-processing capabilities) may at some point imperil even their most survivable forces at sea and mobile on land, and increasingly accurate ballistic missiles, supplemented by hypersonic boost-glide and cruise missiles, may put the whole of their nuclear deterrent

6. *Report on the Nature of Multilateral Strategic Stability*, International Security Advisory Board, U.S. Department of State, April 27, 2016, <https://www.state.gov/documents/organization/257667.pdf>.

at risk. The United States, too, as one working group member pointed out, has growing concerns over the survivability of its space-based command and control assets because of potential advances in cyber and anti-satellite weapons. And the apprehension signaled by Albert Wohlstetter sixty years ago—*viz.*, that efforts to shield one’s nuclear forces could prevent retaliating nuclear missiles already weakened by a first strike from reaching their targets—is again alive as several countries return to building ballistic missile defenses.<sup>7</sup>

Second, agreements reinforcing a secure second-strike capability arduously negotiated over fifty years have either been abandoned or are near collapse.<sup>8</sup> The loss began with the U.S. decision to abrogate the 1972 ABM agreement, removing the primary guarantee that neither side would build defenses perceived by the other as diminishing its retaliatory capability and emboldening its opponent to consider a disarming nuclear first strike. In addition, beginning with the first Strategic Arms Limitation Treaty (SALT I) in 1969 and extending to New START in 2010, in agreeing to set limits at ever lower levels on the number of nuclear warheads and their delivery vehicles, accompanied by an inspection and monitoring regime, the United States and Russia eased, without eliminating, destabilizing concerns about the future survivability of their forces. That process has stalled since 2010 and its remaining achievement, New START, may not survive beyond 2021.

Third, defense planners in the United States and Russia (and Pakistan) are giving increased thought to how nuclear weapons might be used and what kind of nuclear weapons would be most appropriate to use. Unlike China and India, none of the three countries accepts “no first use” as a desirable posture, and each retains the option of resorting to nuclear weapons in a range of circumstances. As a result, there is growing uncertainty over whether the nuclear threshold is being lowered and/or the pathways to inadvertent nuclear war are multiplying. At one level, most U.S. analysts, including participants in the working group, assume that a secure second-strike capability *should* be a key tenet of strategic stability, but, because a surprise disarming first strike seems less likely than other conflict scenarios, some of which would pose a threat to vital U.S. interests or the interests of U.S. allies, many of them, including officials in the last four U.S. administrations, see a refined nuclear capability as necessary in order to deter these threats and to respond if deterrence fails. The refined nuclear capability they have in mind normally features smaller, lower yield, more accurate weapons that could be used with greater precision and less collateral damage.

For some this evolution does not imply lowering the nuclear threshold. Elbridge Colby, for example, has argued that a capability of this kind and its threatened use should only be for “the vindication of vital interests.”<sup>9</sup> Even in this case, however, whether the effect would

7. This was the less-noted side to Wohlstetter’s warning in his famous “The Delicate Balance of Terror,” published in the January 1959 issue of *Foreign Affairs*.

8. Steven Miller lucidly traces this story in “The Rise and Decline of Nuclear Order,” in Steven E. Miller, Robert Legvold, and Lawrence Freedman, *Meeting the Challenges of the New Nuclear Age: Nuclear Weapons in a Changing Global Order* (Cambridge, Mass.: American Academy of Arts and Sciences, 2019), 11–26, <https://www.amacad.org/publication/nuclear-weapons-changing-global-order>.

9. Elbridge Colby, “Defining Strategic Stability: Reconciling Stability with Deterrence,” in Elbridge A. Colby and Michael S. Gerson, eds., *Strategic Stability: Contending Interpretations* (Carlisle, PA: Army War College Press, 2013), 51.

be to increase the risk of inadvertent large-scale nuclear war would appear to depend on, first, the ability of the adversary to correctly identify where vital U.S. interests begin and, second, the likelihood that the use of weapons intended to control escalation is instead seen as a precursor to a massive nuclear assault.

Official U.S. nuclear doctrine does operate on the assumption that Russia has lowered the nuclear threshold by embracing a strategy of “escalating to de-escalate,” that is, at a critical, perhaps early phase of a conventional conflict that it plans to use nuclear weapons to constrain an opponent’s options and dictate the course of the war, and is assembling an arsenal permitting it to do so. Whether this, in fact, is Russian nuclear strategy is disputed,<sup>10</sup> but that U.S. defense planners believe it is and Moscow fails to remove the ambiguity means that one or both countries are advancing the moment when nuclear weapons would be used with no guarantee that executing so-called “limited nuclear options” would not inadvertently lead to uncontrolled nuclear escalation.<sup>11</sup> Moreover, in a perverse interaction, Russia argues that the United States is the side lowering the nuclear threshold by developing low-yield nuclear warheads for the Trident II (D5) sea-based system and for sea-based cruise missiles, which some on the Russian side say forces Russia to reexamine its own approach to limited nuclear options.<sup>12</sup>

## The Challenges

These three developments do much to explain the shaky basis for assuming that Mutual Assured Destruction (MAD) based on each side’s secure (and adequate) second-strike capability remains the underpinning for strategic stability even in the U.S.-Russian relationship, let alone in the nascent U.S.-Chinese relationship. Within both pairings a range of factors has emerged that threaten to ease the pathways to inadvertent nuclear war. They include the Russian and Chinese holdings of dual-capable nuclear and conventional missiles together with possibly shared command and control systems, creating the risk that a U.S. attack intended against a conventional facility could unintentionally strike its nuclear counterpart; China’s possible plans in a regional conventional conflict to incapacitate U.S. systems needed to manage its maritime operations, systems that include satellites and ground-based radars critical to early warning of a nuclear attack; the evolution of U.S. nuclear doctrine to permit nuclear retaliation in the event of a non-nuclear attack on vulnerable U.S. nuclear

10. See Kristin Ven Bruusgaard, “The Myth of Russia’s Lowered Nuclear Threshold,” *War on the Rocks*, September 22, 2017, <https://warontherocks.com/2017/09/the-myth-of-russias-lowered-nuclear-threshold/>; and Olga Oliker, *Russia’s Nuclear Doctrine: What We Know, What We Don’t, and What That Means* (Washington, D.C.: Center for Strategic and International Studies, May 2016), [https://csis-prod.s3.amazonaws.com/s3fs-public/publication/160504\\_Oliker\\_RussiasNuclearDoctrine\\_Web.pdf](https://csis-prod.s3.amazonaws.com/s3fs-public/publication/160504_Oliker_RussiasNuclearDoctrine_Web.pdf).

11. In the two-week June 1983 nuclear game, Proud Prophet, the only one played with senior U.S. officials, the limited use of nuclear weapons, by one account, did not remain limited but inexorably escalated to wholesale nuclear war with five hundred million dead. For an insider’s report, see Paul Bracken, *The Second Nuclear Age: Strategy, Danger, and the New Power Politics* (New York: Henry Holt and Company, 2012), chap. 3.

12. See Vladimir Putin, “Presidential Address to the Federal Assembly,” March 1, 2018, <http://en.kremlin.ru/events/president/news/56957>.

C3I (communications, command, control, and intelligence) facilities; and the uncertain consequences if cyber weapons were used in a conventional conflict to impair warfighting capabilities essential as well to a country's ability to communicate with and control its nuclear forces.<sup>13</sup>

If the notion of strategic stability is eroding in a relationship that has developed concepts and measures that once gave it substance, then among other key nuclear players even the rudiments of strategic stability are absent. Between India and Pakistan not only is the concept seemingly undefined, as participants in the working group noted, but the two sides are unwilling or unable to engage in a strategic dialogue to explore the issue. At the same time the two countries adhere to nuclear postures that ostensibly not only risk propelling them into an inadvertent nuclear war, but one that would rapidly escalate to a catastrophic level. Pakistan's evident plans to use battlefield nuclear weapons to blunt a conventional invasion by India, were it to follow a terrorist attack by Pakistani elements, and India's asserted determination to answer any use of nuclear weapons with massive "punitive" nuclear retaliation provide the concrete pathway to this outcome.

As the February 2019 explosion in tensions following the terrorist attack on the Indian military in Kashmir's Pulwama District demonstrates, with Pakistani figures repeating Pakistan's readiness to go nuclear, contemplating this scenario is not a theoretical exercise. The strange, if welcome, element of crisis stability in this and previous flare-ups seems a precarious fail-safe. The point has been made, including by members of the working group, that both countries' militaries have been very cautious about crossing the nuclear threshold, executing their military actions in carefully choreographed fashion that includes signaling intended to convey that caution.<sup>14</sup>

There is another facet of the challenges impinging on efforts to arrive at a mutually acceptable notion of strategic stability *qua* crisis stability, and it figured prominently in the working group's deliberations. The symbiotic relationship between what a state sees as essential to effective nuclear deterrence and what is required for crisis and arms race stability often involves tradeoffs. Strategic stability as one end of the tradeoff largely disappears when the measure of effective nuclear deterrence is clear-cut superiority—i.e., an advantage at every level of nuclear escalation and, in extreme, a genuine disarming first-strike capability. In all other circumstances the tension between the two is ever-present and unyielding. It is greater because the essence of one objective preserves a unilateral interest and the other requires sacrifices for a mutual interest. When one objective cannot be easily reconciled with the other the tension opens the question whether the goal of strategic stability is even desirable. Thus, as participants in the working group noted, as a practical matter the value of strategic stability is not a given. It is a relative and contingent objective.

13. James M. Acton, "Escalation through Entanglement: How the Vulnerability of Command-and-Control Systems Raises the Risks of Inadvertent Nuclear War," *International Security* 43 (1) (Summer 2018): 56–99; and James M. Acton, ed., *Entanglement: Russian and Chinese Perspectives on Non-Nuclear Weapons and Nuclear Risks* (Washington, D.C.: The Carnegie Endowment for International Peace, 2017).

14. Sumit Ganguly, "Why the India-Pakistan Crisis Isn't Likely to Turn Nuclear: History Shows Escalation Isn't Inevitable," *Foreign Affairs* (March 5, 2019), <https://www.foreignaffairs.com/articles/india/2019-03-05/why-india-pakistan-crisis-isnt-likely-turn-nuclear>.



Just how contingent becomes clearer when contemplating, from a unilateral perspective, what strategic stability that incorporates effective deterrence is. One member of the working group defined it as “ensuring against somebody believing that they can safely and effectively cross the escalatory threshold and developing the capabilities to do so.” How two countries set those requirements may be quite different, and the mismatch may lead away from rather than toward strategic stability. Indeed, each may set requirements that are consciously judged more important than fostering or preserving strategic stability. Moreover, because neither country can be assured that an opponent’s current capabilities will not in the future evolve in a more threatening direction, deterrence planning, particularly when geopolitical tensions are high and mistrust is great, focuses on the shadow of an unknown future.

Finally, much of the time states go about developing weapons and designing deterrence with little thought of the implications for strategic stability. On the U.S. side, for example, many of the advances in sensor technology and missile accuracy that some believe are or will put an adversary’s deterrent forces in peril are the result of the inertial progress of technology, and whether they contribute to or weaken either crisis or arms race stability has not been an important part of the equation.<sup>15</sup> Indeed, while escalation risks and concern over the possibility of inadvertent nuclear war exist among U.S. defense planners, as some members of the working group reported, decision-making in the Department of Defense is not well-structured to include this dimension among the criteria guiding weapons choices and adjustments in nuclear strategy. To the degree that this is true in the U.S. case, in Russia and China the neglect appears to be even starker. In neither country, say observers, do defense planners think in terms of the pathways to inadvertent nuclear war.<sup>16</sup>

Ultimately, however, as some, but not all members in the working group recognized, a workable concept of strategic stability cannot be compartmentalized and conceived in narrow technical terms, fashioned only around the configuration of nuclear weapons systems and the relationships they create. The broader political and geostrategic contexts of which they are a part must also figure in the accounting. This reality matters more when in this new environment the geostrategic environment changes from two-dimensional to multidimensional. The impact is greater still when relations between and among the major players shift from neutral to hostile, as has happened to relations between the United States and Russia and appears to be happening between the United States and China. And both transformations are occurring simultaneously with what might be called the challenge of cross-domain deterrence—i.e., the integration of nuclear with non-nuclear deterrence, the inclusion of cyber, and the development of conventional strategic strike—thereby adding a further complication.

What constitutes strategic stability when for the United States a framework focused on a single country featuring one region must now account for a second country and another

15. Keir A. Lieber and Daryl G. Press, “The New Era of Counterforce: Technological Change and the Future of Nuclear Deterrence,” *International Security* 41 (4) (Spring 2017): 9–49.

16. See the essays by Alexey Arbatov, Vladimir Dvokin, and Petr Topychkanov and by Tong Zhao and Li Bin in Acton, ed., *Entanglement: Russian and Chinese Perspectives on Non-Nuclear Weapons and Nuclear Risks*, 11 and 49.

region? Or for China when its preoccupation with the United States swells to include India, and for India, when the concern is China beyond Pakistan? Or when, as appears to be the case with the rising nuclear powers, basic attitudes toward the role of nuclear weapons and what constitutes strategic stability differ in fundamental respects from those of the established nuclear powers? As some members of the working group stressed, working toward strategic stability, including the role assigned to arms control, has a chance when competitors see “no strategic benefits” in an arms race, and, in fact, believe that striving to compete in the nuclear realm “gets in the way of improving the political relationship.” That, they noted, is clearly not the case today. The obstacles impeding progress toward strategic stability multiply when, again as noted by the working group, the new domains, including cyber and space warfare, are seen as inherently difficult to control and, indeed, by some as better left uncontrolled.

### Ways Forward

Is there a way forward when even in the abstract the road to strategic stability in key nuclear relationships seems so cluttered with obstacles, when relations among the major nuclear competitors are deteriorating, and when the arms control regime created by the United States and Russia is crumbling? In this new and disarranged setting, contemplating the notion of strategic stability requires a larger perspective. Imagining a constellation of factors ensuring against massive homeland-to-homeland nuclear strikes and, short of that, reducing the likelihood that nuclear weapons will be used in any fashion should be a part of the exercise. But if ultimately the objective is to reduce the risk of nuclear war and, in particular, to prevent adversaries from stumbling into inadvertent nuclear war, then the pathways leading to a political-military crisis capable of triggering either outcome need to be factored in.

It is not merely a coincidence that the seminal thinking of Brodie, Schelling, and Wohlstetter came to have such resonance during a period of détente in U.S.-Soviet relations (1969–1973), when leaders on both sides were ready to moderate the competition, including its nuclear dimension. And that progress in strategic arms control consistent, if not necessarily designed, for enhancing strategic stability has occurred when the two sides entertained the possibility of fashioning a more durably constructive relationship. When relations sour and tensions rise, the readiness to worry about strategic stability or pursue arms control fades, while concerns surrounding national defense and the adequacy of nuclear deterrence ascend. When fraught political-security relations are enduring and driven by a seemingly intractable core issue, such as between India and Pakistan over Kashmir, the thought that the two countries could agree on a concept of crisis stability or would together even try to sketch one comes close to fantasy. Progress must almost certainly depend on steps for averting political-military crises that raise the specter of the nuclear threat. That might well include small confidence-building steps in the nuclear sphere, but approaching

a regime that largely eliminates the possibility of inadvertent nuclear war appears unlikely until change begins at a more fundamental level.<sup>17</sup>

If understanding the role and prospects for strategic stability in key nuclear relationships in this vastly more complex many-sided nuclear world requires broadening the concept or at least the factors favoring it, thoughts on how this might be done ought also to change and become more wide-ranging. Several suggestions emerged from the working group's discussions. One idea, however, had near unanimous support. Given the differences in the stages of development, the nature of nuclear programs, and the political contexts in different pairings, participants argued that the better approach is inductive rather than trying to find one size that fits all. Better that the pathways to inadvertent nuclear war be explored in each setting, and steps appropriate for averting what may be quite different mechanisms raising the danger be identified. For example, the danger in the India-Pakistan imbroglio may be at the level of nuclear strategy. If Pakistan is prepared to use battlefield nuclear weapons to blunt an Indian conventional attack much larger than any prior violent incident, and if India means to retaliate with massive strategic nuclear attacks, particularly if it makes progress with its nascent ballistic missile defense system, then the notion of "carefully choreographed conflict" goes by the board. In contrast, in the U.S.-China relationship the road to tragedy may be through conventional war. During, say, a confrontation over Taiwan, for example, were either side in executing conventional options unintentionally to destroy the nuclear weapons, command and control systems, or early nuclear warning assets of the other side, the threshold would have been crossed inadvertently.

In the U.S.-Russian relationship the route may be yet again different. Each country is working to integrate non-nuclear deterrence with nuclear deterrence, refine nuclear options, and strengthen military tools to make it less dependent on nuclear weapons. But each also envisages the moment of war, a war in Europe, in ways that are dangerously at odds. For the United States it starts with a stealth Russian military move or overt land grab against a neighboring state, backed by the threat of limited nuclear escalation if the United States or NATO responds. For Russia it is, in the context of a deepening political-military crisis, a more elaborate version of what the United States did in Kosovo in spring 1999: long-range, precision-air strikes against strategic targets deep within Russian territory, which the Russian military characterizes as "air-space war," and which is a principal focus of current Russia defense planning. The Russian response, either in the event or in anticipation of it, is not likely to be the limited nuclear options that U.S. defense officials envisage, but long-range, strategic strikes from dual-capable platforms. On the U.S. side, because there is growing concern that modernized Russian missile defense systems and cruise missiles will prevent NATO from defending its Eastern-most flank, a problem thought of as anti-access/area denial (A2/AD), the U.S. response to even limited Russian aggression may well include an effort to destroy this capability.

17. The "Off Ramps" project at the Stimson Center suggests a wide range of small and substantial steps—sixteen, ranging from an "expanded missile flight-test regime" to a "hotline between national and nuclear command authorities to manage tensions," <https://www.stimson.org/content/off-ramps>.

Apart from whether these are plausible scenarios and/or what others should be considered, the urging is that defense planners in all nuclear-weapons possessing states, if they care to see strategic stability enhanced rather than eroded, should incorporate into their calculations escalation risks as well as aspects of their weapons programs and nuclear strategy that could lead to inadvertent nuclear war. Ultimately, real progress along these lines would require that peer competitors engage one another, share perspectives on where the risks are, and try to find common ground. However, when relations among all key nuclear actors are deteriorated or deteriorating, as they are now, that would seem a reach too far.

Second, strategic stability even in its most classic form, can be promoted by unilateral actions unrelated to negotiated treaties or other bilateral agreements. As one member of the working group stressed, during the Cold War scarcely any other step by the United States contributed more to crisis stability than the decision to increase the survivability of its nuclear forces by putting a portion of them to sea. Whether that will remain true in the future, given advances in sensor and tracking technologies, as all the major nuclear players proceed with SSBN programs, is a question. But the example suggests the value in considering how new or modified weapons systems, if present on both or all sides among peer competitors, could be stabilizing. One such option, it was suggested, would be for the United States—and presumably other major nuclear competitors—to focus on creating “more resilient command and control systems.”

Third, if the prospect of major strategic nuclear arms control agreements among key players, including Russia and United States, appears dim for now, conceivably less ambitious agreements might be pursued. One working group participant suggested that an agreement among China, Russia, and the United States to eschew testing anti-satellite capabilities against satellites in geostationary orbit, which include early-warning systems and communication assets used for nuclear operations, should be explored. Similarly, were the United States and Russia to salvage New START, one new step addressing Russian and Chinese concerns would be to include boost glide hypersonic missiles under the treaty’s limitations.

Fourth, as one working group member mentioned, in a landscape barren of efforts to control nuclear weapons, ferment at the popular level with civic leadership might focus new attention on the role of nuclear norms as an alternative path to greater safety in a nuclear world. This might include the norm against nuclear use in warfare, the so-called “nuclear taboo” and the norm against nuclear testing. The uncertain future of norms, however, would seem to be reflected, on the one hand, in the weakening of a norm, such as no-first use (now, by some evidence, subject to second thoughts or exceptions even in the two countries, China and India, that embrace it), and, on the other hand, by the support among 122 countries without nuclear weapons for the UN Treaty on the Prohibition of Nuclear Weapons.

Finally, while the working group did not deal with the recommendations of the ISAB’s 2016 report, these constitute a comprehensive set of measures that would reinforce both crisis stability and arms race stability in all contexts.<sup>18</sup> Some are designed to support MAD and secure second strike as a basis for crisis stability, and, therefore, are a dubious standard

18. International Security Advisory Board, U.S. Department of State, *Report on the Nature of Multilateral Strategic Stability*, 3–7.

between countries for whom a secure second strike may be beyond reach any time soon. Others are expressly intended to remove the “incentive to be the first to use nuclear weapons in the event of conventional conflict,” and, therefore, lose force as major powers, including the United States and Russia, place increasing emphasis on “limited nuclear options” to enhance strategic deterrence against a widening array of threats. But, at a minimum, all the remaining steps would move a multivariate nuclear world in a more stable direction.

They are divided into four categories: those focused on policy and doctrine; those on force structure and posture; those on safety (of nuclear stockpiles); and those on security (of nuclear weapons).

In the first category, policy and doctrine, they include:

- No pre-delegation of release authority and “positive measures” to enforce centralized control
- Nuclear weapons should be regarded as a last not an early resort, and used “only in extreme circumstances where the very existence of a state (including a treaty ally) has been threatened.”
- During conventional (or cyber) conflict refrain from “using cyber or conventional means to attack distinct nuclear command and control systems,” and in advance provide public pledges to this effect.
- Mechanisms to avoid miscalculations:
  - Ballistic missile launch notification agreements
  - Avoiding cruise or ballistic missile tests in the direction of an opponent
  - Routine bilateral consultations between militaries
  - Formal agreements on avoiding dangerous incidents and preventing dangerous military activities

In the second category, force structure and posture, they include:

- Confining ballistic missile defense to thin systems
- Striving for a clear separation between nuclear and non-nuclear forces and command and control
- Avoiding deployment of nuclear weapons in forward areas that “could lead to a ‘use-or-lose’ situation”
- Conducting exercises and simulations allowing defense planners to understand the range of risks and challenges they might face in crises

The premise of the ISAB’s report was that rather than remaining tied to Cold War approaches and language, the effort should make as its primary objective “reducing the chances of nuclear war, and using as an organizing principle for discussions ‘agreed characteristics and practices of states possessing nuclear weapons so as to reduce the risks of war.’” The Academy’s Working Group on Strategic Stability generally agreed that the complexities of a new multipolar nuclear age required that the concept of strategic stability be rethought. The group wrestled with how that rethinking might be done, and offered preliminary and partial answers to some of the fundamental questions that the expert and

policy-making communities in the major nuclear-weapons possessing states need to address—four, in particular.

Is the quest for an overarching definition of multipolar strategic stability feasible or likely to be productive? The answer for most in the group is probably not. If strategic stability in a multipolar nuclear world depends on the concept's standing in pairs of nuclear competitors, how might that best be promoted? Again, for most, the answer is by focusing on the pathways to inadvertent nuclear war particular to each. What should be the role of the Cold War concept of crisis stability as MAD based on a secure second-strike capability in this multipolar context? Their answer is, it remains central to the U.S.-Russian relationship and potentially so to the U.S.-Chinese relationship, but to be viable the parties need to deal with the factors and developments that now threaten it. And, fourth, how abstract or idealized should or can discussions of criteria be and still be useful? Once more, for most, their answer is that leaving aside political trends in key relationships and changes in their geostrategic context will render any effort to imagine a workable concept of strategic stability, including any effort to identify an equilibrium point in the tradeoff between effective deterrence and strategic stability, impractical. These questions are scarcely the only ones that need to be addressed. Nor are the answers more than a first stab. They are meant, however, to prod experts and policy-makers in all quarters to begin addressing a challenge whose implications, if ignored, are potentially inestimable.

# Appendix I

## Meeting the Challenges of the New Nuclear Age Working Group on Strategic Stability\*

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Francesca Giovannini  
Michael Krepon  
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\*This essay is independently authored and does not purport to represent the views of any member of the Working Group on Strategic Stability other than its author.

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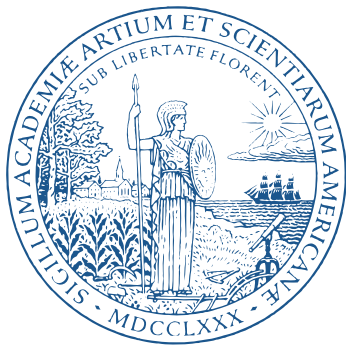
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