

Stability at Low Nuclear Numbers: Alternative Framings
Cornell University, Ithaca, New York
November 13 – 15, 2015

Conference Summary

Introduction

On November 13 through November 15, 2015, Dr. Judith Reppy and Dr. Catherine Kelleher hosted a conference at Cornell University as part of their MacArthur Foundation-funded project on “Creating Conditions for a Stable Transition to a New Nuclear Order.” Attendees included academics and subject matter experts from around the world, including the United States, Germany, Sweden, and Pakistan. During the conference, three academic papers were presented by their authors, who received feedback from the conference participants. The following is a not-for-attribution summary of what was discussed, organized by session. The only participants who are identified by name are those who presented papers.

Session I: Paper by Dr. Benoit Pelopidas, “The Theorist Who Leaves Nothing to Chance”

Remarks by Dr. Pelopidas

Dr. Pelopidas began his presentation with a brief outline of his paper, titled “The Theorist Who Leaves Nothing to Chance.” The paper addresses three main puzzles: How did it become possible to make nuclear weapons a permanent feature of our world when initially they were thought to be temporary? Why is Thomas Schelling so popular? And why has the call for a new paradigm for thinking about nuclear ethics received such a muted response? Dr. Pelopidas argues that Schelling’s ideas have played a large role in making the permanence of nuclear weapons acceptable by claiming to solve a fundamental problem of deterrence—the credibility of nuclear threats. His framings also endlessly postpone the possibility of deterrence failure and bypass the moral paradox of nuclear deterrence, further contributing to the acceptability of the permanence of nuclear weapons.

As is often the case in academia, Schelling may not be popular because he is right, but because his ideas are convenient. His work purports to solve the credibility problem of nuclear threats, upon which frameworks such as strategic stability are based. He does this through “the threat that leaves something to chance.” To solve the fundamental problem of deterrence, Schelling takes chance and turns it from a liability of deterrence to an asset of deterrence. Instead of fearing the element of chance in the deterrence relationship, Schelling harnesses the properties of chance to make deterrence credible even if there are doubts about the willingness of either side to actually act on their retaliatory threats.

According to Dr. Pelopidas, Schelling views games of nuclear deterrence as iterated games, implying that if a nuclear crisis spirals out of control and nuclear weapons are used, it will not lead to the end of human civilization. This gives the illusion that accidents are manageable, which increases confidence in the knowledge we have about nuclear weapons and the frameworks that govern their use. This Schelling-inspired confidence lessens the impetus to

think about alternative frameworks for nuclear weapons and lessens the pressure for disarmament, thus making the permanence of nuclear weapons more palatable.

A deterrent threat needs to be credible in order for deterrence to work. Therefore, the leaders of a nuclear-armed nation must intend to follow through with their retaliatory threats. According to some, the intention to carry out an action has the same moral status as actually carrying out that action, thus making the intention to respond to an adversary's attack with nuclear weapons morally indistinguishable from actually doing so. This moral paradox of nuclear deterrence could be used to spur action on disarmament, but Schelling's idea of the threat that leaves something to chance enables deterrence to work without the leadership of a country actually intending to retaliate with nuclear weapons. This enables leaders to avoid moral judgement by relying on the threat that leaves something to chance instead of the credible threat of certain retaliation, a move that helps to defend against the moral paradox of nuclear deterrence. Dr. Pelopidas argues that this, too, has contributed to the permanence of nuclear weapons.

Dr. Pelopidas ends his remarks by addressing the notion of irreversibility, and asks if the framework that claims nuclear weapons cannot be un-invented is an obstacle to lower nuclear numbers. Does the claim of irreversibility promote the idea that the end goal should be strategic stability instead of an alternative framework which might be better, or more conducive to lower nuclear numbers or disarmament?

Remarks by the Discussant

Dr. Pelopidas's paper shows how Schelling takes the uncertainty inherent in nuclear deterrence and turns it into risk, making it quantifiable and thus manageable. This has enabled deterrence to survive, even though it was initially thought to be a temporary solution to the problem of nuclear weapons. This movement towards institutionalizing ideas that were supposed to be temporary is a feature of the early Cold War. In fact, the RAND Corporation, where Schelling worked, was itself supposed to be temporary but became permanent. What was it about the early Cold War period that enabled stopgap measures to become institutionalized? Only by locating the origins of this dynamic can we hope to dislodge what is now permanent and make it temporary.

Defense intellectuals during the 1930s and 1940s argued that it was legitimate to employ propaganda to manipulate public opinion against Nazi Germany and Imperialist Japan because the threat they posed was so severe. Such manipulation would end once the threat was defeated, and the normal process by which the will of the public drove U.S. policy would be restored. However, once the Soviet Union acquired nuclear weapons—and with them, the ability to annihilate humanity—these defense intellectuals changed their mind and advocated a permanent structure wherein the public would have limited say on defense and foreign policy. The public was not to be trusted with decisions that could result in the end of the world. This framework created the intellectual conditions that allowed the institutionalization of temporary measures.

This situation can be seen in the post-9/11 world as well, when policymakers argued, and continue to argue, that the threat posed by terrorism justifies temporary measures that undermine individual liberties in order to protect the country. Over a decade after the 9/11 attacks, measures thought to be temporary, such as the PATRIOT Act, are still with us, and may well become as permanent as RAND and the idea of nuclear deterrence have become.

In contrast to the mathematics- and theory-based models developed at RAND's Economics Division, the Social Science Division, headed by Hans Speier, used simulations (political-military games) informed by the facts of history. Speier and others at the Social Science Division argued that the rational choice models used by Schelling and like-minded theorists were unsatisfactory—a universally valid solution to a given policy problem was unattainable.

Dr. Pelopidas's paper also illustrates the important role that academics have played in shaping American foreign policy. This raises the question: how can present-day intellectuals critical of American foreign policy effect the change they would like to see? It is imperative for intellectuals to enter government and pull the levers of power, not simply comment and analyze in their writings and speeches. However, this must be done while adhering to utopian ideals. How does an intellectual reconcile ethical commitments, a long-range vision, and government service?

Discussion

The discussion began with a back-and-forth over whether or not RAND was really envisioned to be temporary. One participant noted that many think tanks, including RAND, received funding from the government, specifically the Pentagon, and part of the reason that their views helped to shape the U.S. nuclear enterprise is because their scholars were invited into government and encouraged to think about issues that had not been thought about before, and could not be tested. This participant also noted that U.S. force structure is designed for deterring country X from taking action Y, which encompasses a wide range of conventional and nuclear capabilities, so talking solely about “nuclear deterrence” while ignoring the role that conventional capabilities play in U.S. force posture and strategic doctrine will leave any discussion about stability at lower numbers incomplete and disconnected from the reality of how the Pentagon actually sees its nuclear weapons.

Another participant encouraged others to look beyond the microcosm of force structure and think about how the U.S. role in the world is changing, and how nuclear weapons fit into the role that the United States envisions itself playing. The nuclear age was born during a period of immense change in America's role in the world; now that we are at another such moment, is there an opportunity to revise the nuclear framework? That framework, which Schelling helped to design, is currently completely institutionalized. Part of this framework envisions responding to any nuclear attack against the United States with nuclear weapons. According to one participant, this does not make sense. In many exercises, when an enemy state uses a nuclear weapon against the United States, the response is often nonnuclear, so in a sense, the current conventional wisdom about nuclear weapons is disconnected from the way that the Pentagon would actually respond to a nuclear attack. This has implications for how to think about a stable future at lower numbers of nuclear weapons. Another participant mentioned that the role of academics should be to “denormalize” the current framework and take advantage of the current historical inflection point to reshape deterrence.

The next participant wondered if Russian strategists had read Schelling, and if so, what did they think of his ideas? If one is to answer the question of how Schelling normalized the practice of nuclear deterrence, the Russian viewpoint of his work must be included.

It must be kept in mind that much of the strategy surrounding nuclear weapons is an ex post facto construction that emerged after the weapons were already built for bureaucratic and military-industrial complex reasons.

Another participant advised Dr. Pelopidas to further define what he means by uncertainty and risk in the paper; these terms are at the center of the paper but are not defined sufficiently. Dr. Pelopidas responded that he defines uncertainty as being both what is beyond the realm of accessible knowledge and that of the control of the agents: the unknowable and uncontrollable. On the contrary, he added that the world of risk is probabilistic, which means that probabilities are assigned to possible events. As such, it is bounded, knowable, and controllable, supposedly.

The next commenter observed that the word “uncertainty” has become a dirty word in the social sciences, which can be seen, notably, in the discipline of economics, but has also influenced how we think about nuclear deterrence.

The next participant noted the Catholic Church’s position on nuclear deterrence as a morally unacceptable policy during the 1980s as an attack on Schelling’s ideas. The Church rejected the notion that it was possible to continue with this policy for a long period of time, undercutting the idea of the permanence of nuclear weapons *on moral grounds*. This caused Roman Catholic soldiers to be removed from missile silos between 1982 and 1983. The fact that the Catholic Church’s position failed to move the debate in a meaningful way proves just how thoroughly Schelling’s ideas have become institutionalized.

Another participant said that the disarmament movement is historically cyclical and is based on triggers that make people feel unsafe (the Strontium-90 from atmospheric nuclear tests and the European missile debate during the 1980s are two examples). The cyclical history of the disarmament movement provides insight into where we are now, and could provide clues for how to take advantage of another peak in the movement’s strength.

The next participant noted that many of the underpinnings of Schelling’s arguments—concepts such as rationality—have been shown to rest on shaky ground. If one broadens deterrence beyond the nuclear realm and into the conventional realm, or even thinks about it in terms of everyday life, there are countless examples of deterrence failure. What exempts nuclear deterrence from the normal dynamic of deterrence, which often ends in failure? Another participant observed that the only explanation is the magnitude of the catastrophe that would result if deterrence failed in the nuclear realm. Dr. Pelopidas added that Schelling conceptualizes deterrence as a relationship between the United States and an adversary that has less agency, as shown by his propensity to analogize deterrence as between a parent and a child.

Session II: Paper by Dr. Anne Harrington, “Power after Nuclear Weapons”

Strategic stability is inherently linked to a certain form of deterrence tradition which makes it difficult to envision a world free of nuclear weapons. We must move past this blockage in the debate in order to conceptualize stability at lower numbers and disarmament. This means conceptualizing not just future technologies that will enable future verification regimes, but theoretical frameworks to think past the limits of the current debate.

We don't necessarily need to look to the future to think about what a world without nuclear weapons would look like because there are currently states that engage in practices that might characterize a nuclear-free future. Iran provides a salient and interesting example. Unlike other nonnuclear states, Iran has no nuclear umbrella and no negative security assurances. Given this situation, they have an incentive to cross the nuclear threshold. Instead, Iran has built a nuclear infrastructure for the purpose of trading it.

In a way, Schelling has done himself a disservice by not extending his framework past the manipulation of risk, which in Schelling's world is the end goal of deterrence.

The absolute value of nuclear weapons involves the consumption (detonation) of the items themselves to produce material outcomes. Viewing nuclear weapons in terms of relative value, however, enables them to act as a currency in an exchange economy. Over time, a technological system has developed wherein the weapons themselves are not valuable if they are used; their value lies in what they can be traded for. Using the weapons would destroy their value.

The power of nuclear weapons is that they create a common interest not to use them. If they are used, that is a demonstration that their power has declined. It would be a sign that their power has been so degraded that they need to be consumed and destroyed instead of being used as a currency.

If one associates power and violence closely, getting rid of nuclear weapons is forfeiting power. But is power the outcome, or the instrument that causes it? If it is the instrument, it becomes difficult to disarm. What makes the weapons powerful is not simply that they are extremely explosive, but that because they fundamentally change the human condition, they have created a new form of practice. That practice is the source of their power.

The existence of nuclear weapons creates a shared incentive to determine the future, which can be harnessed to create new types of interactions.

Remarks by the Discussant

Dr. Harrington's paper and theoretical work represents a fascinating alternative framework for nuclear weapons. Her paper consists of three main arguments. The first argument is that nuclear weapons represent something new in international relations with radical consequences for how states relate to each other. The paper makes the claim that violence and power are opposite, but does not explain how this conclusion was reached. Because this claim is central to the paper, it would strengthen the paper to explain why violence and power are in fact opposites. The paper also ignores the fact that nuclear deterrence has a role in limiting escalation once a war has already started—interwar deterrence. Because this is such an important part of deterrence, it would be beneficial for the paper to address it.

The second argument is that nuclear weapons represent a new commodity form. This focuses attention on the scarcity, durability, and divisibility of nuclear weapons. As a consequence of this new commodity form, a new space for interaction is created. This idea needs to be developed further, with evidence from Cold War history and contemporary interactions between nuclear-armed states, including smaller nuclear powers. The strength of this argument and any model associated with it will be strengthened if it applies to smaller nuclear-armed states as well, not just to the United States and Russia.

The third argument is that Iran used the threat to go nuclear to secure concessions from the international community, and that this represents a new form of deterrence. The discussant did not agree that this dynamic represented a new form of deterrence, and requested clarification on why this claim was made in the paper.

Discussion

One participant said that the ideas in the paper were extraordinarily imaginative, but the paper is currently incoherent and needs to be better fleshed out for it to achieve its full potential. The section of the paper that talks about the “pull of the future” is brilliant, but the role of uncertainty and risk needs to be incorporated into the paper, as it was in Dr. Pelopidas’s paper. Lastly, Bitcoin could provide an interesting analogy or example for the currency argument, as it replaces trust in institutions with trust in technology. The paper would be well served if it looked not just at 19th century theories of money but 21st century theories of money as well. This might help answer the question about the role in confidence in techno-politics.

The next participant added that the literature on “special money” could provide additional theoretical frameworks that would strengthen the paper, because nuclear weapons are not a standard currency.

Another participant said that the paper misses an important distinction between how deterrence is theorized and how it is operationalized by the United States. The paper uses the phrase “the nuclear war,” which refers to a large-scale nuclear exchange between superpowers that causes the extinction of one or both civilizations. This is not the only scenario troubling the minds of experts and officials in Washington. The paper needs to address the types of conflicts that the United States envisions today, not just the global nuclear war scenario. By going directly from the deterrence of peer competitors to the argument that Iran’s behavior is a new form of deterrence, the paper misses the middle ground that is most salient in the minds of war planners. The paper would also benefit from an examination of how countries that currently view nuclear weapons as a means of violence, like North Korea, could change their fundamental understanding of nuclear weapons and adopt the currency/trading framework.

The next participant brought up that the way deterrence has been theorized and operationalized has changed over time. For example, the deterrence framework of the 1960s enabled countries to still have diplomatic power without the possession of nuclear weapons. This enabled Germany to sign the NPT.

The next participant noted that it would be interesting to explore the role of culture in nuclear deterrence and how that would affect or limit the currency framework developed in the paper.

The next participant noted that derivatives provide a useful language for the currency framework, because they are financial technologies that deal with uncertainty.

Session III: Panel: Alliance Relations

Remarks by First Panelist

Looking at which countries acquired nuclear weapons and when they acquired them, a security model of proliferation emerges. Countries that do not have superpower protection will likely proliferate if an enemy or neighbor gets nuclear weapons. When a nuclear umbrella is extended to other countries, they stop their proliferating activities and end their nuclear weapons programs. This logic has been the prevailing thinking about proliferation.

However, there is more to this dynamic. Not all allies are created equal, and countries generally know where they stand in the list of priorities of superpowers. Because of this, ambivalent allies can attempt proliferation, or at the very least keep their options open so as to not close the door to nuclear weapons in the future. This can happen when one junior partner observes another junior partner receiving preferential treatment. It can also happen when junior partners are in competition with one another, creating doubt about which ally the United States will support. Junior partners in such situations tend to try to prove their worth to the United States in an over-competitive manner, and even try to sabotage one another. Examples of this can be seen between Japan and South Korea, France and the United Kingdom, and Poland and Romania.

In the Japan-South Korea case, there is currently much discussion about the possibility of South Korea trying to get nuclear weapons again if Japan increases its breakout capacity. However, this competition existed during and even after the Cold War, though it has garnered little attention over the past few decades.

During the early Cold War, a number of provocations from North Korea failed to illicit a strong U.S. response, prompting the South Korean government to question the credibility of U.S. security guarantees. With Nixon's Guam Doctrine, South Korea foresaw Japan taking over as the primary military power in East Asia. With the United States withdrawing and Japan—a former colonial power—ascendant in the region, South Korea's nuclear option began to look more attractive. Fears of a rising Japan also prompted North and South Korea to work together in limited ways to contain Japan, for instance by both countries pressuring the United States to keep its forces in South Korea for fear that a withdrawal of U.S. forces would cause the Japanese to retake the Korean Peninsula.

In conclusion, the traditional security model of proliferation—and U.S. policy towards proliferation—have not sufficiently taken into account the behavior of junior partner allies such as Japan and South Korea. How should the United States incorporate these findings into its nuclear and nonproliferation policy? Perhaps trilateral assurance mechanisms will be more effective than multiple bilateral mechanisms, or perhaps directing the attention of junior partners toward a common enemy will help dilute intra-alliance feuding.

Remarks by Second Panelist

Among second-tier allies, there is a tangible fear and mistrust about the fortitude and reliability of the United States. Part of this fear is attributable to American decline, and perceptions about how the United States will manage its decline. It can also be attributed to the Defense Department's poor ability to distinguish between assurance and deterrence. Assurance requires a much higher burden of proof than deterrence, a fact that U.S. policymakers often forget.

Nowhere has this been seen more than in the Persian Gulf, among the countries of the Gulf Cooperation Council (GCC). The United States' relationship with the GCC is currently characterized by a high degree of GCC dependence coupled with mistrust about American security guarantees. The Gulf Arabs see the Iran deal as the first step of an American retreat from the region, which worries them greatly. However, they have no alternative to the United States as a security guarantor.

Because of their fear of a rising Iran (and the belief that Iran's rise has been sanctioned by the international community) the GCC has made it clear that they will seek parity with Iran. But the parity that they seek is not nuclear. The GCC states recognize that they do not have the ability to acquire viable nuclear weapons programs without significant outside assistance. They wish to achieve parity with Iran through greater regional influence, which has led to increased foreign policy independence and assertiveness, from Saudi Arabia and the United Arab Emirates in particular. They also seek conventional parity with Iran. One of the Gulf Arabs' chief complaints about the United States is the lack of, and quality of, defense and intelligence cooperation. They believe that if the United States would share more intelligence, or assist them with standing up their own defense industrial bases, they would be in a more advantageous position vis-à-vis Iran. The pressure from the GCC for greater defense cooperation will likely increase, with requests for more advanced weapons (including weapons covered under the Missile Technology Control Regime) becoming louder and more frequent.

Discussion

The first questioner asked what the main strategic interests of the United States are in the Persian Gulf, and what, if anything, is being done to prepare for the effects that climate change will have on the region. The second panelist answered that the main U.S. national interests in the region are oil and stability. With regard to climate change, the Defense Department has not been able to openly think about climate change since the Republicans took the House of Representatives in 2010.

The next question asked about the possibility of South Korea acquiring nuclear weapons by inheriting the North's arsenal if the North were to collapse. The first panelist responded by saying that if South Korea kept the North's arsenal after the North fell, Japan would respond by acquiring their own arsenal.

The next participant asked what role the U.S. relationship with Israel played in the feelings of mistrust in the Gulf. The second panelist responded that Israel is not the Arab Gulf states' main concern, and while they speak against Israel in public, private discussion reveal a very different set of priorities.

The next questioner brought up the assistance that the United States is currently offering Saudi Arabia and the United Arab Emirates in their war against the Houthi rebels in Yemen, and asked what more the GCC countries should reasonably expect in terms of American assistance. The second panelist said that while the United States does a great deal for its Gulf Arab partners, they always feel the need for more assistance because they recognize the fundamental asymmetry in the relationship, and worry that American grand designs for the region will not take their interests into account, despite lower-level cooperation. Another element to the puzzle is the Gulf Arab states' inability to fully internalize the assistance that the United States provides. An

example of this can be seen with ballistic missile defense. The GCC countries view this as a priority, and want American assistance with their BMD systems. But they do not have the capacity to use the systems that the United States provides to their full potential, which makes providing further assistance difficult.

Session IV: Paper by Dr. George Lewis, “Prompt Global Strike Weapons and Missile Defenses: Implications for Reductions in Nuclear Weapons”

Conventional prompt global strike (CPGS) and ballistic missile defense (BMD) are often lumped together as two technologies that threaten arms control and complicate efforts at arms reductions, particularly vis-à-vis the Russians. The argument made in the paper is that CPGS is complementary or even supplementary to nuclear weapons because they can strike many of the same targets but are more usable, while BMD poses serious problems for future reductions in nuclear weapons.

Russia is moving towards more mobile ICBM delivery systems and is increasing the number of MIRVed missiles it is deploying. The Russian SLBMs are also increasingly MIRVed. Because of this, Russia will not have any incentive to reduce in order to maintain parity with the United States after New START limits are met.

CPGS weapons are conventionally-armed weapons that are capable of striking anywhere in the world within one hour. The main examples of CPGS weapons are conventionally-armed ballistic missiles, hypersonic boost-glide weapons, and hypersonic cruise missiles. Hypersonic cruise missiles may not have the range to be considered as CPGS weapons, but they will be considered here because they are frequently categorized as such. Conventionally-armed ballistic missiles are simply ballistic missiles with a terminal guidance system that is activated once the warhead reenters the atmosphere. This can make them accurate up to 30 or even 10 feet. Hypersonic boost-glide weapons start out following the same trajectory as a ballistic missile, but after it burns out and reenters the atmosphere it pulls up into a long but extremely fast glide over most of its journey before steeply diving onto its target. Because it is within the atmosphere and thus uses atmospheric lift, it is capable of maneuvering. The maneuverability of boost-glide vehicles is one of the biggest differences they have from ballistic missiles, which are far less maneuverable even if they are equipped with a terminal guidance system. Hypersonic cruise missiles are simply cruise missiles that travel faster than subsonic cruise missiles, but because they travel at such high speeds, they have to fly higher up in the atmosphere (50,000 – 100,000 feet).

There are many concerns about the effects of these weapons. The first is a fear that a conventionally-armed ballistic missile might be mistaken for a nuclear-armed ballistic missile by an adversary, leading to miscalculation or inadvertent nuclear war. With regard to boost-glide vehicles, an adversary would not know what the intended target was due to the weapon’s ability to substantially maneuver and deviate from a ballistic trajectory. There is also a fear that these weapons could help escalate a conventional conflict to a nuclear conflict because they can hold at risk targets that were previously threatened only by nuclear forces, such as nuclear command and control targets.

The above problems may not necessarily present an obstacle to lower nuclear numbers. The factor that is most likely the biggest issue with regard to arms reductions is that these weapons can be used to attack an adversary's nuclear forces. A combination of CPGS (to strike at an adversary's nuclear forces) and BMD (used to intercept the adversary's surviving nuclear forces) could convince nuclear-armed nations that they need a larger number of weapons to maintain a survivable deterrent. However, in the case of Russia, a significant portion of their nuclear forces are survivable against U.S. nuclear forces. This means that they are also survivable against any CPGS capability the United States or others might deploy in the future. The only development that might change this would be a breakthrough in the ability to track mobile missiles in real time which could be exploited by CPGS. The prospect for such a development in the near term is slim.

Russia could, in fact, reduce the size of its arsenal without endangering its survivability at all because they can do it strictly by de-MIRVing. This would reduce the number of warheads without reducing the number of delivery vehicles. This would reduce the number of warheads that would be survivable, but that would only be a problem if there were extensive deployments of missile defenses.

Developing CPGS could limit Russia's willingness to reduce the size of its arsenal, not because the weapons threaten the survivability of their forces, but because it would contribute to the overall military threat that they feel from the United States.

Ballistic missile defenses are a much bigger problem for stability at lower numbers and for arms reductions than CPGS. During the Cold War, offense had a huge advantage over defense, both in numbers and in technology. This is still the case, but may not be for much longer. Currently, the United States plans to deploy 44 Ground-Based Interceptors in Alaska and California as part of its National Missile Defense program. If a third site is added on the East Coast, the total number of missiles would be brought up to somewhere around 100. It is unlikely that the number of NMD interceptors stationed in the United States would get much larger than this. Instead, the growth in numbers and capability will come from "strategic-capable" naval interceptors. The United States is currently deploying increasingly capable interceptors on Aegis ships. The SM-3 Block I is too slow to cover a large part of the United States, but the Block IIA missiles will have a much greater capability in this regard. With the Block IIA interceptors, the United States will be able to protect much of the U.S. homeland with ships deployed at sea. This is not a new concept; in fact, the Strategic Defense Initiative Organization in 1992 envisioned a similar arrangement using the "Navy Upper-Tier" missiles, which are similar to the SM-3 Block IIA interceptors.

It is conceivable that the United States will buy hundreds of these interceptors over the next twenty years. By 2030, the United States could deploy around 600 strategic-capable interceptors on ships, in addition to another 100 or so deployed within the United States. This could be a huge obstacle for further arms reductions, as the Russians and potentially others might calculate that such a large number of interceptors exceeds the number of warheads they deem to be survivable, thus threatening their second-strike capability.

Nuclear-armed ballistic missiles form the cornerstone of every nuclear power's strategic deterrent policy. Over time, it might be possible to reduce dependence on ballistic missiles, in which case missile defenses might play a stabilizing role. For this to happen, countries would

have to give up their reliance on ballistic missiles before the defenses were deployed. If you deploy the defenses before you give up the ballistic missiles, it would simply drive you to an even greater reliance on ballistic missiles.

Over the next twenty years, the United States will be injecting a large number of strategic-capable interceptors into a world that is still reliant on ballistic missiles for maintaining stability.

Remarks by the Discussant

The impact that advances in conventional weaponry will have on strategic stability will be huge, and is not getting the attention it deserves from the expert community. There is a fundamental impediment that complicates efforts to allay Russian concerns about American advanced conventional capabilities. It stems from the United States trying to achieve a nuclear-free world while also sharpening its increasingly robust conventional capabilities. Russia remains severely behind the United States in terms of conventional weapons. Russia and China both view the U.S. pursuit of advanced conventional capabilities as destabilizing.

The concept that most dominated the Obama administration's 2010 Nuclear Posture Review was strategic stability. But from a Russian or Chinese perspective, strategic stability is most adversely affected by the United States through its development of advanced conventional capabilities. This very same conventional superiority that so worries Russia and China is also instrumental in assuring U.S. allies and convincing them that they need not develop nuclear weapons of their own. This creates a conundrum: how can the United States assure its allies with conventional superiority while at the same time maintaining the strategic stability that is a requirement for achieving the ultimate objective of a nuclear-free world?

The current CPGS program claims to be a niche capability that would be used at the beginning of any military campaign to strike fleeting targets. But based on past U.S. interest in CPGS concepts, it is conceivable that it may grow from a niche capability into a widely-deployed capability. The origins of CPGS concepts make any claim to limit its deployment to a niche capability dubious in the minds of adversaries.

Whether in the end CPGS will produce a niche capability or a widely-deployed capability will influence the likelihood of deep cuts.

It is also important to be mindful of the impact of cruise missiles on the ability to make deep cuts. The Russians are gravely concerned about the cruise missile threat to their territory. China is rapidly building up its land-attack cruise missile capability—they aim to have as many cruise missiles as they do ballistic missiles. It is too difficult and too costly to build an entire cruise missile defense system to protect the United States, so the United States has focused on point defense to defend critical targets from cruise missile attack. What do the impact of cruise missiles and the difficulty of defending against them mean for stability? Nobody has offered solutions to this problem.

Discussion

The first question asked about the strategic-capable sea-based interceptors that the Navy plans to deploy aboard Aegis ships and in Europe. The SM-3 Block IIB was thought of as the strategic-capable interceptor, but it was cancelled. Now it is only the IIA that will be deployed. What are

the differences between the IIA and the IIB? The IIA is only a kilometer per second slower than the IIB was slated to be, but besides this difference it is largely identical. Block IIA missiles based in Europe cannot intercept Iranian ICBMs because they cannot fly high enough—the incoming ICBM will go right over the interceptor. The IIB would have had the ability to intercept Iranian ICBMs, and possibly some Russian ICBMs if the interceptors were deployed in Europe. If the Block IIA interceptors are pulled back to the United States, they could intercept Russian ICBMs.

The next question asked about a recent op-ed written by former Secretary of Defense William Perry and Andy Weber opposing the new cruise missile being developed by the United States and calling for a global ban on nuclear-armed cruise missiles. The discussant endorsed these ideas, but was skeptical that they would come to fruition.

The next participant asked why the Russians simply didn't move towards a heavier reliance on cruise missiles if they are worried about the capability of U.S. missile defenses. One of the speakers responded that the Russians and the Chinese are actually interested in boost-glide vehicles because U.S. missile defenses have no capability against them (they remain in the atmosphere during the glide phase, and U.S. strategic missile defenses are all exoatmospheric). Given that North Korea and Iran are unlikely to develop boost-glide vehicles, Russia and China developing such systems could reduce their opposition to the United States deploying missile defenses.

The next participant asked if the European Phased Adaptive Approach (EPAA) would end up being scaled back because the threat from Iran has diminished. One of the speakers responded that it most likely wouldn't be, because there is a strong devotion to missile defense within the Republican Party that would prevent the program from being scaled back or cancelled, regardless of the security environment.

The next comment mentioned that nuclear-armed cruise missiles are also deployed in South Asia. Thus, any global ban on nuclear-armed cruise missiles would face resistance from India and Pakistan.

Another participant brought up the complication of integration, and mentioned that if ballistic missile defenses and cruise missile defenses were both deployed, they would not be able to communicate with each other. This can lead to mistakes, such as when Patriot missiles shot down friendly aircraft during the 2003 invasion of Iraq.

The discussion then moved into the prospects for deep cuts and disarmament more generally, with two participants agreeing that the notion of ending conflict before disarming is as illogical a position as demanding disarming before ending conflict. The process must be in parallel. As such, deep cuts should not be an end unto itself, but a stepping stone to complete disarmament. It is therefore discouraging that President Obama has overseen the beginning of a \$1 trillion modernization of the U.S. nuclear arsenal, without incorporating deeper cuts.

Session V: Panel: Institutional Resilience

Remarks by First Panelist

Risk analysis and security studies were developed in completely different disciplines; risk analysis was developed primarily in economics and sociology, while security studies is housed under international relations. For a long time, there was almost no talk about risk within the security community. The terrorist attacks of 9/11 focused risk analysis on the likelihood of catastrophic events, and helped risk analysis and security studies find a common research agenda. The number of security-focused journal articles that deal with risk has increased substantially.

Of the different schools of thought within security studies that draw from the general risk management literature, “global risk management” is the most relevant for discussions about the resilience of international organizations. Within this school there are differing opinions about how states deal with risk. How does NATO, as a “risk community,” deal with risk? Because of the member states’ proximity to one another and a certain degree of shared values, some scholars believe NATO is well-suited to deal with risk. Other scholars, however, disagree. They focus on what they see as a flexible system of alliances. Since the security challenges are multidirectional and multifaceted, they cannot be assessed by intention and capability. Risks are fluid. They are not quantifiable. The complexity of the system limits the ability of the existing organizations to effectively deal with risk over the long term. This thesis foresees states forming ad hoc coalitions to deal with specific issues, instead of permanent alliances.

The nature of security cooperation is changing as a result of risk and its incorporation into the security studies field. It is unclear if the permanent structure of alliances, such as NATO, will endure, or if the alternative system of ad hoc coalitions will become the dominant method that states deal with risk in the 21st century.

Remarks by Second Panelist

Because of the need to ensure compliance and limit the effects of cheating in any regime that oversees massive arms reductions, institutions and their role will be critically important for stability at lower numbers of nuclear weapons. Under any alternative framing of stability at lower numbers, institutions will play a role in establishing norms or limits, and enforcing compliance.

In light of this, the resilience of institutions becomes an important factor. Though much has been written about the resilience of institutions, little is actually known. Realists believe that the resilience of institutions is contingent on shifts in the balance of power in the international arena, and the world’s most powerful states often use institutions to help them achieve their preferred outcomes. Another viewpoint asserts that institutions acquire a life of their own once they are created. Yet another camp believes that the costs associated with establishing an institution—and the uncertainty about reestablishing an institution if it is destroyed—prompt states to be cautious in their behavior towards institutions.

In this panelist’s view, whether institutions acquire a life of their own and remain immune from dismantlement or abandonment due to cost-sensitivity from states is less relevant than if institutions ultimately fulfill the objective they were created to fulfill. The Conventional Armed

Forces in Europe Treaty (CFE Treaty) provides an excellent example of an institution that is still active but does not function in a way that produces the intended outcomes that were envisioned with the creation of the institution.

Three main factors will be important in enabling a new institution to facilitate stability at lower numbers of nuclear weapons and pave the road to nuclear zero. The first factor is adaptation. Any institution that is created to facilitate stability at lower numbers must be able to adapt in order to be resilient, and thus credible. The European experience with CFE shows that adaptation is more difficult than it may first appear. Institutions dealing with nuclear issues need to have extremely intrusive inspection mechanisms that must be up-to-date, so ensuring that adaptability is incorporated into the structure of any such institution from its birth must be a priority. The second factor is norm contestation. If a state is allowed to get away with continuously challenging the norms of an institution, it will erode the credibility and effectiveness of that institution over time. The third factor is internal clarity. In order to be resilient, an institution for lower numbers needs to be clear and precise in its provisions. Unfortunately, most arms control agreements fail to do this sufficiently.

Stability at lower numbers is too important an objective to rely on institutions that are fundamentally flawed. Treaties need to be constructed in such a way as to reduce differences in definitions and norms, and must be extremely clear in their expectations and detailed in their compliance mechanisms.

Discussion

The first commenter noted that much research exists showing that the only way to get a final agreement on contentious and complicated issues is for the agreement to be ambiguous. The first panelist responded by saying that constructive ambiguity is an important diplomatic tool, but when it comes to an institution as important as one that would oversee reductions and stability at lower numbers, constructive ambiguity would have to be limited for the institution to be resilient and effective. The institution would need to deal with issues such as breakout capabilities, conventional crises that weaken cooperation on nuclear issues, global power shifts, or even the reemergence of nuclear weapons.

The next participant said that modern societies deal with risk in two different ways: insurance and regulation. This reveals a way of thinking that reduces risk to things that can either be insured against or regulated. If risk in the security realm is conceptualized this way, the definition of risk has already been narrowed down to something “manageable,” which limits the ability of scholars and decision-makers to try to uncover the known unknowns and the unknown unknowns.

Another participant said that a great way to spark thinking about known and unknown unknowns was to look to science fiction. Through science fiction writing and film, people can be forced to confront previously-held notions and examine their foundations.

The next questioner asked what each panelist meant when they said “lower numbers,” and commented that different states have differing opinions on what constitutes low numbers of nuclear weapons. The panelists responded by saying that an agreed-upon definition is not

currently possible, that that these are the issues that need to be discussed in order to create the conditions that will allow an effective institution to come into being.

Workshop Dinner Panel: U.S.-Russian Relations

During the workshop's dinner, a series of questions were posed to two panelists by the moderator about the future of U.S.-Russian relations. Each panelist responded to each of the three questions posed with prepared remarks.

The first question asked was: what is the current state of U.S.-Russian relations? What are the principal channels being used for communication and cooperation?

The first panelist said that to describe the current state of U.S.-Russian relations as bad would be an understatement. From the U.S. perspective, Russia has “violated the rules of the game” with its behavior in Crimea, its violations of European security standards, and its employment of hybrid warfare tactics. It is not compliant with the CFE Treaty or the INF Treaty. Some in the United States believe Russia is now a revisionist power, with intentions to redraw European borders and become a new empire. Putin and his clique are viewed as authoritarian and nationalistic. From the Russian perspective, the United States has been overstepping its bounds on almost all international policy issues and intervening militarily across the globe in a hegemonic and destabilizing manner. Many in Russia believe that the United States wants Russia “on her knees” and has a policy of pushing back and weakening Russia whenever it can. Russia is also still upset at the U.S. withdrawal from the ABM Treaty and views U.S. missile defense activities in Europe as a threat to its security. The United States has consistently underestimated the psychological dimension of the bilateral relationship since the end of the Cold War.

The second panelist said that nonproliferation is often separated from discussions about strategic stability when in fact it should not be. An act of nuclear terrorism, especially if the nuclear material were of Russian origin, would be extremely destabilizing for the U.S.-Russian relationship. Nuclear security cooperation serves as a barometer for broader cooperation between the United States and Russia. Both Putin and Obama have emphasized nuclear security as a priority, and technical experts on both sides understand the importance of cooperation. Despite being seen as a priority in both countries, many of the avenues and mechanisms of cooperation which were born with the end of the Cold War no longer exist. Over the last two years, cooperation on nuclear security has degraded, which does not bode well for cooperation in other areas where the divergence of interests is even greater.

The next question posed by the moderator was: what are the domestic political constraints and conditions that impact the U.S.-Russian relationship?

The first panelist said that, on the U.S. side, the biggest constraint is that there is no long-term foreign policy agenda. U.S. foreign policy is extremely volatile, making it very difficult for other countries to rely on or predict U.S. behavior. The lack of bipartisanship in the United States also makes a sensible long-term foreign policy very difficult—a fact that does not go unnoticed in world capitals. In Russia, the biggest domestic concern is that nationalism might spiral out of control. Due to the high levels of nationalism within Russian society, cooperation with the United States might not be possible, even if the Putin elite wanted it.

The second panelist provided some historical background to show just how much the foreign policy discussion has devolved in the United States over the past forty years. The year 1968 saw the Tet Offensive, the assassination of Martin Luther King Jr., the Kent State shooting, and the assassination of Robert Kennedy. After all of these events, the United States still signed the NPT in mid-1968. During that time, the United States was able to take bold action in the foreign policy realm, even during periods of instability, but not today. The inability of the United States to enact a stable foreign policy due to the lack of bipartisan consensus in Washington is the biggest domestic constraint on the U.S. side.

The last question asked by the moderator was: what recommendations would you make to the next president when she or he takes office next year?

The first panelist gave three recommendations. First, “play it cool.” The United States does not need to respond to every perceived Russian provocation, and overreacting to Russian bad behavior can be unhelpful and destabilizing. Unfortunately, this recommendation is unlikely because it would be extremely costly domestically. Second, the next president must establish clear priorities and signal those priorities to allies and partners in Europe and Asia. Third, the United States should provide continuity in U.S.-Russian nuclear arms relations and begin preparing for the expiration of New START in 2021. It is important that a follow-on treaty be concluded.

The second panelist also gave three recommendations. First, in the absence of direct communication due to the poor state of bilateral relations, it is imperative that both sides find alternative forums and channels to communicate, particularly on nuclear security. Second, both countries must find a way to reconstitute the nuclear security R&D and cooperation that was so successful over the last twenty years. Third, the United States must do a better job of having a whole-of-government approach to nuclear security.

Session VI: Panel: Arms Control in a New Era

This panel consisted of three arms control experts who offered their opinions on the future of arms control.

The first panelist began by saying that the current low point in U.S.-Russian relations makes any progress on arms control extremely difficult. In addition to a diplomatic environment ill-suited for progress on arms control, Russia claims it cannot move forward on arms control unless things like missile defense and conventional prompt global strike are on the table—and the United States has signaled repeatedly that they are not. Either Russia truly feels it cannot decouple arms control from these issues, or it is using these issues as an excuse not to talk about nuclear arms control. Either way, progress is unlikely to be made with Russia on bilateral arms control.

The general climate of uncertainty regarding China’s rise and the feeling of vulnerability from terrorism makes bold action on arms control unlikely outside of the U.S.-Russia context as well. Serious debate about the benefits of arms control to American security is lacking, and arms control is increasingly seen as a gift to other nations with little utility for the U.S. national interest. Because of this, over the next five years the best that can be hoped for is low-level communication and cooperation. Nuclear numbers are not likely to be reduced in this new era.

Instead, the focus should be on how to define and achieve stability and prevent the new low in U.S.-Russia relations from bleeding into the nuclear relationship.

The second panelist discussed how to make progress on arms control even in an environment that is not conducive to it, or at the very least preventing the degradation of the status quo. This involves maintaining and expanding the progress made with the Iran deal, which will face difficult implementation and political issues. Apart from the Iran deal's implementation, the only progress that can be made is in areas that do not require Russia and do not require Congress. One such area is modernization. The degree to which the United States is modernizing its nuclear forces is causing a new arms race. Encouraging the administration to limit the scope of nuclear modernization, especially in President Obama's final year in office, should be a priority. This includes cancelling or delaying the new cruise missile, life-extending instead of replacing the ICMB force, and reducing the number of Ohio-class replacement submarines. Eliminating an entire leg of the triad is not politically possible, so the strategy of arms control proponents in Washington is to scale back all three legs.

The third panelist focused mainly on South Asia. Pakistan realizes that an arms race with India will be costly, but it feels that it has no other choice. Searching for ways to remove Pakistan's strategic elite from this mental trap will be key for moving forward on arms control between India and Pakistan. It will also be a challenge to educate Pakistan's population about the dangers of a nuclear arms race because so many other issues, from health problems to terrorism, are seen as more immediate. There is little room for debate on nuclear issues in an environment of food and water scarcity, and daily threats to public safety from extremist groups and lawlessness.

The first questioner asked how members of Congress might be better educated about the value of arms control so they will be more likely to prioritize it, or at least not oppose it if a future administration brings an arms control treaty up for a vote. The second panelist answered that it is extremely difficult to educate Congress about issues that aren't "timely," meaning issues that members are not dealing with at the moment. Congress members are too busy to invest time in learning about an issue that they do not immediately have to deal with. In this environment, the best way to educate members of Congress on arms control is to find an arms control angle to an issue that they are currently dealing with. This approach is slow and less effective, but it is the only way to increase knowledge about the importance of arms control in a political environment that is not conducive to educating elected officials about long-term national security needs.

The next participant noted that in many countries, Iran and Pakistan particularly, the nuclear project is seen as a proxy for the national project, and if the nuclear project fails, the national project will fail. Because nationalism is such a strong force, how does the linkage between the success of a nation's nuclear program and people's perceptions of national success or failure affect arms control? The third participant said that the one way to place limits on a nation's nuclear program in such a context is to create financial incentives. If that nation is facing a financial crisis and realizes that tradeoffs must be made, it may agree to certain limitations on its nuclear project that enable it to spend less money.

The next participant brought up that, from Pakistan's perspective, nuclear weapons have been extremely useful for preventing escalation with India. In each of the wars and crises that Pakistan has had with India, escalation was capped because of Indian fears of a nuclear exchange and the ambiguity about Pakistan's "red lines" that would trigger such an exchange. The third participant

responded by saying that the reasons for the lack of escalation in each of these wars and crises are so numerous and so complex that it cannot be attributed solely to the possession of nuclear weapons.