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MANAGING RISK: NUCLEAR WEAPONS IN THE NEW GEOPOLITICS

A BROOKINGS INTERVIEW

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MANAGING RISK: NUCLEAR WEAPONS IN THE NEW ERA OF NEW GEOPOLITICS

DIRECTOR'S SUMMARY

Since the end of the Cold War, more attention has been given to nuclear non-proliferation issues at large than to traditional issues of deterrence, strategic stability, and arms control. Given the state of current events and the re-emergence of great power competition, we are now starting to see a rebalance, with a renewed focus on questions of stability and arms control. In August 2017, Brookings Vice President and Director of Foreign Policy Bruce Jones convened eight Brookings scholars and affiliates—Madelyn Creedon, Robert Einhorn, Bonnie Jenkins, Suzanne Maloney, Michael O'Hanlon, Jung Pak, Frank Rose, and Strobe Talbott—to discuss the shifting balance and prioritization of strategic stability and non-proliferation. The edited transcript below reflects their assessments of the new nuclear world order; the current state of arms control with Russia and China; the impacts of emerging technologies; the status of the non-proliferation regime, including a look at North Korea and Iran; and U.S. nuclear policy moving forward. The Appendix explains key agreements and treaties that have shaped the arms control and non-proliferation regime to date.

The discussion found that:

- *The classic model of arms control (based on bilateral U.S.-Russia agreements like New START and the Intermediate-Range Nuclear Forces Treaty) has come under immense strain given the current security climate, the return of great power competition, and the advent of new technologies. Despite that strain, the role of arms control continues to be paramount in reducing the risk of nuclear war, which should remain the priority of U.S. nuclear policy.*
- *The security environment for a successful non-proliferation regime is deteriorating. The major challenges are Russia using the threat of its nuclear weapons to achieve a broader geopolitical strategy, China's resurgence as a great power, the United States' unilateral withdrawal from the Iran nuclear deal, and a North Korea unlikely to accept complete denuclearization in the near to medium term.*
- *Despite that deterioration, Russia, China, and the United States have continued to find areas of cooperation in order to maintain the integrity of the non-proliferation regime, such as with Iran and North Korea. However, even those areas are now under strain.*
- *Nuclear proliferation to U.S. allies remains unlikely but if allies begin to seriously question U.S. security assurances at the same time that external threats mount, some countries may reconsider what was once a non-starter. Moving forward, executive policy and language needs to affirm U.S. extended deterrence commitments to our allies and partners.*
- *The context surrounding U.S. nuclear weapons has shifted drastically in the last decade, amplified by the resurgence of great power competition with China and Russia, escalated proliferation by North Korea, and development of new technologies. The U.S. nuclear modernization debate necessitates a recognition of major shifts in recent years to reflect clearly the changes of the geopolitical situation.*
- *Policymakers must rethink how best to restore stability by considering new technologies in non-nuclear strategic domains (cyber, space, bio, etc.) and methods for discussions, not just bilaterally with Russia but multilaterally with China and others. The United States needs to begin strategic stability dialogues with both Moscow and Beijing.*
- *The Trump administration should extend New START for five years, as allowed by the terms of the treaty, in a demonstration of confidence-building for U.S.-Russia relations and U.S. support for arms control and non-proliferation commitments.*
- *In an effort to strengthen nuclear weapons policies that will re-establish global stability and reduce the risk of nuclear war by including emerging technologies and utilizing innovative approaches, the United States must consciously engage the next generation. This effort should be concentrated in schools, but will require collaboration with national labs and government to ensure successful pathways of entry for generational overlap and replacement.*

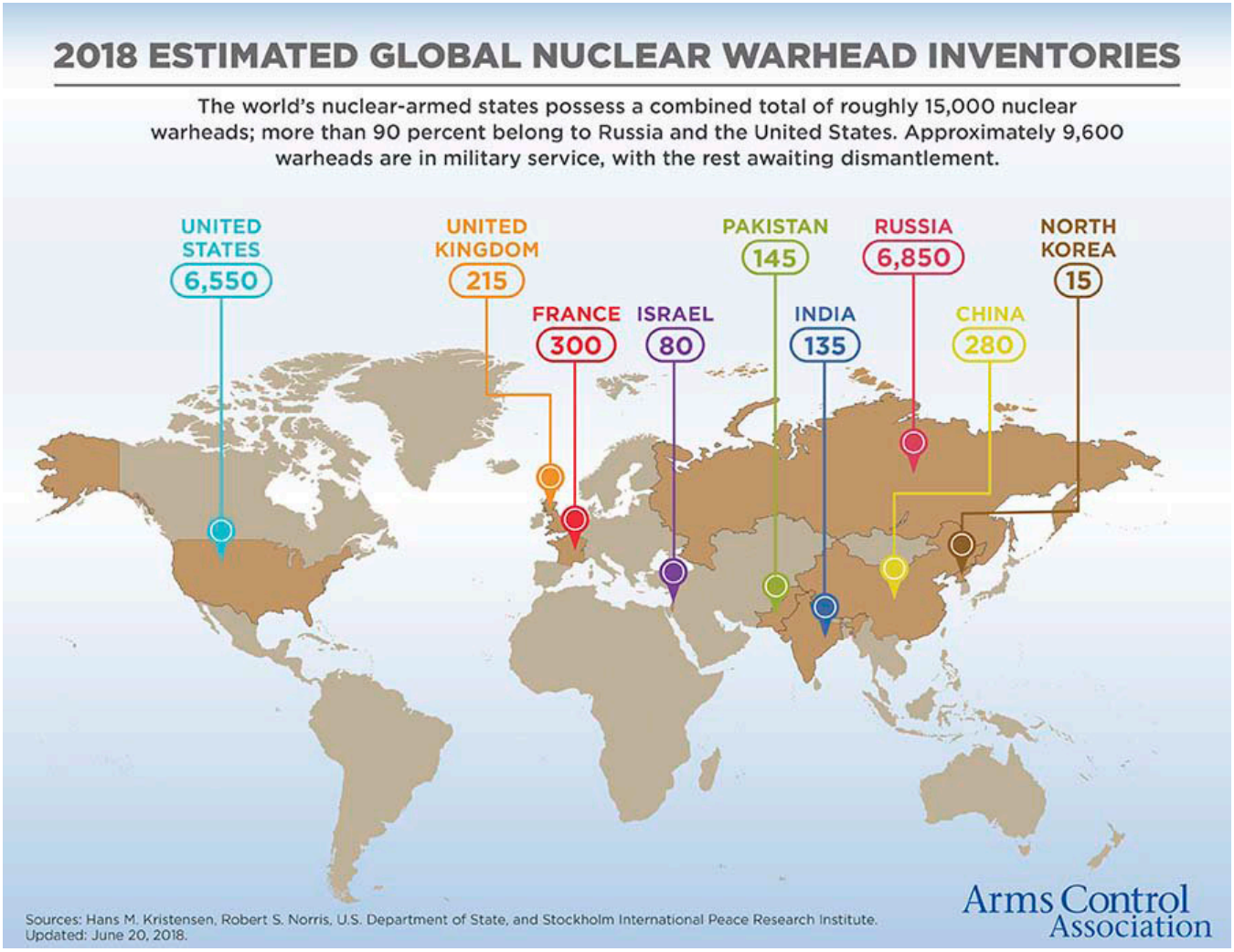
This interview was being finalized when the United States decided to suspend its obligations under the Intermediate-Range Nuclear Forces Treaty, and Russia—whose non-compliance provoked the U.S. decision—took a similar decision. In a post-script addendum, Frank Rose, Strobe Talbott, and Madelyn Creedon discuss the implications. While they do not agree on the merits of the U.S. decision, they see the need for the United States to simultaneously work to uphold commitments to our allies, while engaging in diplomatic efforts with Russia to manage the fallout of the treaty's demise in a way that protects New START. In order to do so, U.S. deployment of ground-based missiles overseas would be unwise.

INTRODUCTION

I. THE NEW NUCLEAR WORLD ORDER

BRUCE JONES: For the last two decades, governments and observers have paid more attention to nuclear non-proliferation issues at large than to the more traditional issues of deterrence, strategic stability, and arms control. As great power competition re-emerges, this balance is now shifting back. Today I want to discuss the relative prioritization and interaction of those two pursuits—strategic stability and non-proliferation—that don't always align. I'd also like to discuss whether the U.S. government is well-organized to handle the contemporary challenges posed by nuclear weapons.

Frank, in your June 2018 congressional testimony, you set out seven themes for managing nuclear issues. I thought it was revealing that you started with nuclear modernization. In 2005, that would not have been where you started.



FRANK ROSE: That was a deliberate choice. I think we're at an inflection point in the evolution of nuclear arms control. For the last 25 years, we were focused on a strategic stability framework that was fundamentally about reducing the number of nuclear weapons. We are at the end of that era and probably won't return to the reductions process for the foreseeable future. The question now is how do we manage great power competition with Russia and China? Nuclear deterrence is a key element of this discussion, and nuclear modernization is an important component of deterrence.

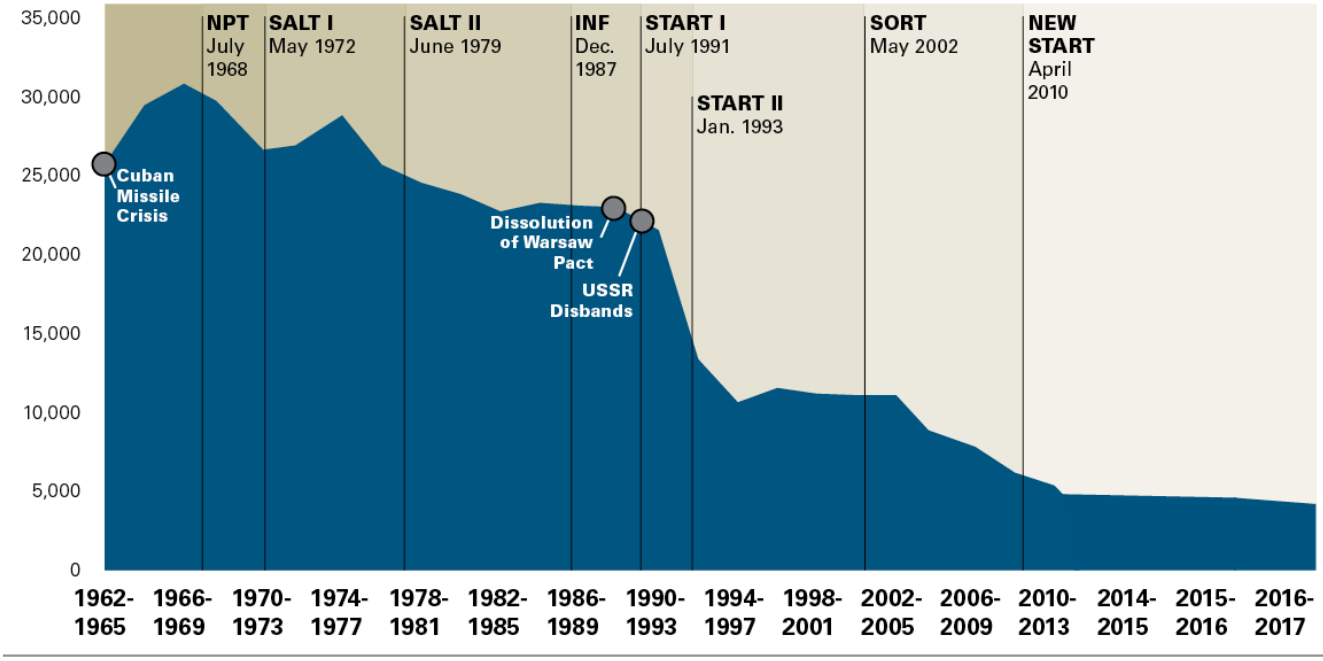
And while I believe there is still a role for arms control in this new era of great power competition, I think we need to think about it differently. In many ways, we have to go back to the dynamics Strobe Talbott chronicled in his books, *Deadly Gambits* and *Endgame*, on how we use arms control to manage competition and prevent nuclear war. Similarly, Les Aspin, former secretary of defense in the Clinton administration, said the goal of nuclear arms control is to prevent a nuclear war. If we can reduce numbers and reduce costs, that's great, but the meat and potatoes of nuclear arms control is to prevent a nuclear war.

STROBE TALBOTT: I agree it is increasingly important to look at deterrence and arms control together. "Classical" arms control has become out of date. The extraordinarily disruptive evolution of the Russian Federation and the re-emergence of great power competition have transformed the strategic debate around nuclear weapons.

ROBERT EINHORN: I agree with Frank that, in the current environment, stability has to take priority over further reductions. I also agree with Strobe that the classical model of arms control is really out of date. The prevailing framework for decades was largely about bilateral U.S.-Russia agreements providing for equal numbers of nuclear weapons on equal numbers of three familiar types of delivery vehicles: intercontinental ballistic missiles (ICBMs), land-based missiles, and strategic bombers.

U.S. Nuclear Weapons Stockpile, 1962-2017

Since the late-1960s, the United States and Russia have signed a series of nuclear arms treaties that have contributed to steep cuts in their active and inactive nuclear warhead stockpiles.



Sources: U.S. Department of State, U.S. Department of Defense, Arms Control Association. Updated: January 19, 2017.

Now, if U.S.-Russia relations were to recover significantly and if Russia's Intermediate-Range Nuclear Forces (INF) Treaty violation were somehow to be resolved, both of which I think are very unlikely, then conceivably there could be another round of arms negotiations, along the lines that the Obama administration suggested in 2013 with a further one-third reduction of arsenals. But even if that somehow materialized I think it would be the last classic arms control measure.

Two developments are making the classic model obsolete. First, the emergence of China, potentially a peer competitor with the United States. Second, the advent of new systems and technologies that affect strategic stability. These include more effective missile defenses, long-range conventional strike systems, anti-space and anti-cyber systems that could threaten early warning systems and command and control capabilities, and hypersonic vehicles. There are many more variables in the equation now, and further productive arms control negotiations will require the United States, Russia, and China to reconceptualize strategic stability.

MADELYN CREEDON: Some of this change is just the natural course of events. At the end of the Cold War, there were so many nuclear weapons and it was clear that nobody needed quite so many. Cooperative threat reduction was logical, especially while Russia was in dire economic straits and the United States was focused on terrorism. Despite arsenal reductions, however, no nuclear power was really willing to give up their nuclear weapons.

The new environment we see today is a product of great powers deciding they had to have better, though not necessarily more, nuclear capabilities. Russia needed nuclear weapons to get back on the world stage, and it started modernization once it had the money to do so. The United States had a series of unfortunate incidents that really brought to light how badly the U.S. complex had deteriorated. China wanted to exert more influence in its region. Today, we need to worry about growing qualitative differences in nuclear capabilities, not absolute quantities. It is a question of functions, not just numbers.

FRANK ROSE: Madelyn is absolutely right. If you go back to Thomas Schelling's seminal work on arms control written in the early 1960s, he talks about this issue of numbers versus character. When we think about stability in the future, we really need to go back to the origins of arms control and focus on the character of the weapon.

We can no longer use the "two-states, one-weapon" paradigm, focusing strictly on bilateral U.S.-Russia nuclear arms control. In addition to the United States and Russia, we're also going to have the U.S.-China relationship and the India-Pakistan relationship. Meanwhile, the introduction of new technologies disrupts the one weapon construct. The challenge today is how to address strategic concerns at both the bilateral and multilateral levels.

BRUCE JONES: Let's turn to these bilateral and multilateral concerns.

ARMS CONTROL

II. RUSSIAN RESURGENCE

BRUCE JONES: Russia has not only undertaken steps to modernize its nuclear weapons arsenal but has also explicitly threatened the use of nuclear weapons. How should the United States approach the bilateral nuclear relationship with Russia?

MICHAEL O'HANLON: We can't have strategic nuclear stability without a broader view of great power stability. Nuclear weapons are not going to become safe on their own if the great powers don't agree on what they're going to compete over. To the extent that Russia is brandishing nuclear threats or weapons, it's perhaps largely psychological, because they're trying to disrupt. As Strobe pointed out, over the last 10 or 15 years, they've gone in a very different direction than we would have hoped.

Russia doesn't necessarily want nuclear stability in the absence of achieving other goals. Russia wants to use nuclear threats in service of a broader agenda that may actually focus on disruption in the first instance, not stability. If Russia decides that violating or ending an arms control treaty serves its broader geostrategic purposes, it would be more than happy to do so. It's not going to pursue a nuclear arms control agenda for its own sake.

So presuming that everyone is after the same kind of stability on the nuclear front may be an incorrect premise. It's sort of an obvious point at one level, but it's worth underscoring because it's different from how we had gotten used to thinking for many years.

FRANK ROSE: If you take a step back and look at Russia's overarching strategic situation, you understand that nuclear weapons are critical to Russian national security and geopolitical strategy. They have no real allies, except for Belarus and Syria. Their economy is not a modern 21st century economy. They face demographic challenges. Their conventional capabilities have improved, but continue to lag behind those of the United States, especially on a global level. Their "strategic partnership" with China is about one thing: managing and balancing American power. Nuclear weaponry is one of the few areas where Russia sits at the table as an equal with the United States.

This has implications for strategic and geopolitical agreements with the United States. Russia does not believe that the European security architecture put in place in the late 1980s and early 1990s is in its interest. Russia's "suspension" of the Treaty on Conventional Armed Forces in Europe and violation of the Intermediate-Range Nuclear Forces Treaty are symptoms of broader Russian dissatisfaction with that architecture. There is a view in Russia that those agreements were imposed at a time when they were weak, and Russia wants a re-do.

I think Russia has a different view of bilateral nuclear relations with the United States. They did not sign the New Strategic Arms Reduction Treaty (New START) because they believe in a world free of nuclear weapons—they do not. The New START Treaty was about maintaining strategic nuclear parity with the United States. It also provides Russia with insights into the development of our strategic forces and places caps on us. I think they still see value, as do I, in maintaining that bilateral strategic stability framework. However, what that means for additional reductions, especially with regard to non-strategic nuclear weapons, is a separate matter.

Russia's President Vladimir Putin (5th L) visits the National Defence Control Centre (NDCC) to oversee the test of a new Russian hypersonic missile system called Avangard, which can carry nuclear and conventional warheads, in Moscow, Russia December 26, 2018. Sputnik/Mikhail Klimentyev/ Kremlin via REUTERS

BRUCE JONES: What role does Russia play in the North Korean and Iranian proliferation efforts?

MADELYN CREEDON: On the North Korean issue, I think Russia generally plays the role of the disruptor. North Korea views Russia as a minor player because there is not a lot of aid, assistance, or political benefit to talking to Russia or drawing closer to Russia. Pyongyang has generally held Russia at arm's length.

SUZANNE MALONEY: Iran looks very different. Russia played a critical role in the negotiations that led up to the Joint Comprehensive Plan of Action (JCPOA) and did so even during a significant deterioration in the overall tenor of U.S.-Russian relations. Russia supported a diplomatic resolution to what was then an emerging crisis on Iran's nuclear capabilities.

Today, on Iran, Russia is not the disruptor because the United States is the disruptor. By virtue of the Trump administration's decision to walk away from the Iran nuclear deal, the Russians appear to be the more reliable partner. They preserve and strengthen their strategic partnership with Iran and Syria and deepen a previously anemic economic relationship with Iran. And, of course, Russia benefits from a rise in oil prices as a result of reductions in Iranian export capacity.

ROBERT EINHORN: Yes, but Russia genuinely does not want Iran to have nuclear weapons or a large-scale enrichment capability. Russia has a commercial interest in continuing to sell nuclear reactors and fuel for those reactors to Iran. So, the United States and Russia do have a common interest in limiting Iran's nuclear weapons potential over time. We're not in a situation now where we can engage in that cooperation, but will need to in the future if Iran is to be discouraged from pursuing nuclear weapons.

III. THE CHINA CHALLENGE

BRUCE JONES: Let's talk about Beijing, which seems to be in a very different place than Moscow. It is clearly seeking over time to change the order to its benefit and to American cost, but not in the same way as Russia. Where do nuclear weapons fit into Chinese thinking?

FRANK ROSE: China presents a fundamentally different nuclear challenge. First, whereas Russia has used all sorts of rhetoric and threatened allies of the United States with nuclear weapons use, Beijing continues to maintain a no-first-use policy and its rhetoric has been very restrained. Second, if you look at the Chinese modernization program over the last two decades, it is clear they're not seeking parity with the United States or Russia. Their focus is, in my view, to ensure that they have a secure and survivable second-strike capability against the United States, especially in the face of U.S. missile defenses. They see U.S. missile defenses, especially space-based defenses, as an existential threat to that deterrent. I'm thoroughly convinced that they will do whatever is necessary to maintain a credible second strike.

My real concern about China is their offensive cyber and anti-satellite capabilities. And unfortunately, we don't yet have a strategic dialogue with China on non-nuclear strategic capabilities. We need one. With Russia, we do have such mechanisms, though they are fraying.

MICHAEL O'HANLON: I'm struck overall by China's restraint on nuclear matters. Like Frank, I'd push back a little against painting Russia and China with the same broad brush, as was done a lot in the 2018 National Defense Strategy and 2017 National Security Strategy, and which happened in the final years of the Obama administration as well, at least at the Pentagon.

They are fundamentally different. I consider Russia much more reckless, and it has a lot of potential to keep being reckless for many years to come. Even if in some broad historic sense it's declining, Russia can be a thorn in our side for a long time.

China is a rising, flexing tiger. Bob Kagan says, "expecting China not to use its muscles is like expecting a tiger cub not to grow teeth." We're going to have to deal with China for a long time. But in most areas of military competition, there is an element of restraint in how China pursues this. I'm not trying to condone it or encourage it, but especially on the nuclear front, I think we have to be struck by China's relative restraint. I am

grateful for that, even as I reserve the right to be critical about a lot of other elements of Chinese foreign policy.

STROBE TALBOTT: Would you agree that the reason for this important difference between China and Russia is that Russia has not participated in globalization while China has? China needs a peaceful world order.

MICHAEL O'HANLON: Yes, at this point China seems to want to gradually mold the world more toward a co-hegemony or co-superpower status of some kind. But it doesn't necessarily want to overturn the whole order on the way. Russia is much more willing to overturn big pieces of the Euro-Atlantic order, probably for the reason you posit, plus a Russian sense of bitterness and historical grievance that operate at an emotional level.

BRUCE JONES: It strikes me that if I were sitting in Beijing right now, I could see Russia's risk-taking, provocations, and destabilization as quite a useful thing to have out there on the chess board. Beijing doesn't want to have to do that itself, but to the degree that it weakens us, distracts us, and divides Europe, those are all good things for Beijing as long as Putin doesn't go too far. Perhaps there is some of that in this space, too.

IV. TECHNOLOGY AND NUCLEAR WEAPONS

BRUCE JONES: We have said we need to reimagine our conceptual and diplomatic approaches toward arms control, particularly in light of dramatic technological changes. What impact do cyber capabilities have on nuclear weapons and strategic stability more broadly?

FRANK ROSE: They are fundamentally changing the game. The February 2018 Nuclear Posture Review discusses this challenge, especially as we modernize our nuclear command and control system. Right now, our nuclear command and control system is probably about 40 years old and relies on old technology. As we modernize, we need to take into account the cyber threat.

More generally, the full suite of strategic capabilities—nuclear, cyber, missile defense, artificial intelligence, under-sea communications cables, outer space—are becoming increasingly integrated. One of the mistakes we made in the Obama administration was eliminating Madelyn's position, the assistant secretary of defense for global strategic affairs. In that position, you had one person who could look across the horizon of these various strategic capabilities and provide an integrated response. I will assure you, the Russians and the Chinese do not view nuclear, cyber, and space as separate. They view them as integrated. And they're correct because, if we were to get into conflict with Russia or China, it's unlikely that conflict would remain in one domain.

BRUCE JONES: One of the conclusions of the 2018 National Security Strategy was that actions in the cyber domain could be met by a nuclear response. Did you agree with that formulation?

FRANK ROSE: No, I do not. We need to be more careful about threatening a nuclear response. I appreciated that both the National Security Strategy and the Nuclear Posture Review recognized the interaction between cyber and these other technologies. However, I'm not convinced that the United States would use a nuclear weapon in response to a cyberattack, especially if that cyberattack did not result in the deaths of many people. We need to ensure we have viable, and credible, response options to cyberattacks.

MICHAEL O'HANLON: When you look at cyber, artificial intelligence, and biological weapons, for those three technologies, the way I would think about a nuclear threat would be if any one of those three were ever used in a manner that caused consequences commensurate with those of a nuclear attack, you would not tie your hands in terms of your response. I would use language like that rather than vague, sweeping language.

MADELYN CREEDON: I believe we need some degree of ambiguity in all of these contexts. But perhaps the more imminent concern is the cybertheft of intellectual property, which, over time, has the ability to change strategic relations. Most cyberattacks to date have still been more annoyances than anything else, even in places like Estonia and Ukraine where Russia has done some pretty significant damage to the grid. Criminal and intellectual property theft should be the top concern in the near term.

STROBE TALBOTT: The next chapter is planes falling out of the sky in the hundreds.

MADELYN CREEDON: Well, that's where we have to better protect our military and critical infrastructure assets against cyberattacks and maintain the ability and flexibility to respond to those attacks in any way we want, be it cyber, conventional, or even nuclear. As Michael said, the consequence of the cyberattack draws the response, not the mere fact of it being a cyberattack. If an attack takes down a substantial part of the U.S. banking system or the U.S. electric grid and people start dying, there should be significant consequences, although a nuclear response is hard to imagine.

It's a disservice to isolate cyber and fail to see at it as part of a strategic whole, as part of a network of toolsets that, like anything else, has cause and effect. In many respects, cyber is kind of like gunpowder. It's new, it's different, and people will figure out how to use it. Artificial intelligence and advanced manufacturing will also fundamentally change the future strategic balance. There won't be strategic stability if we don't contend with the wide-ranging impacts of these technologies, and those that emerge in the future.

FRANK ROSE: A successful strategic modernization program must include the ability to adapt quickly to changes in technology. The changes we're likely to see over the 50-year life of the modernization program are going to be tremendous. I hope the current administration is ensuring that the modernization program is structured for agility, so that we can insert new technology and also adapt to actions by our adversaries, especially when it comes to artificial intelligence.

BRUCE JONES: Do you worry about a near- or medium-term future in which a move as grave as nuclear launch is automated?

FRANK ROSE: Not in the near term. However, as we move forward, artificial intelligence has the potential to impact strategic stability significantly, in two particular areas. One is the issue of tracking both sea-based and land-based mobile systems. I don't think the technology has advanced to date to put these mobile systems at risk, but within 15 to 20 years they could, and that would have a dramatic impact on how the United States and other nations deploy their systems. The other area of concern is early warning systems and the potential for AI to scramble strategic nuclear calculations.

BRUCE JONES: Do you worry China would draw the line in different places when it comes to removing humans from the decisionmaking "loop," as the Pentagon calls it?

FRANK ROSE: Yes, China, Russia, and authoritarian countries may have very different views on deploying artificial intelligence. The best approach is to try some soft rules of the road amongst the major powers, as a way to manage competition responsibly. I fundamentally believe that as long as nations believe that they can gain military advantage from these new technologies, it's going to be very, very difficult to get a treaty. We should focus on areas where you can achieve some measure of mutual strategic restraint based on mutual interest.

NON-PROLIFERATION

V. CRISIS IN NORTH KOREA

BRUCE JONES: Let's dive into two specific files: North Korea and Iran. On the former, what is the state of Pyongyang's nuclear weapons program, and where are we headed?

JUNG PAK: Perspective is important here. After over six years of not talking to anybody but a sushi chef and Dennis Rodman, Kim Jong Un decided to talk. Some of the steps he's taken—the explosion at the Punggye-ri nuclear test site, dismantling some of the missile engine test site, and returning some prisoner-of-war remains—seem more amplified because of Kim's behavior for the past seven years. His father Kim Jong Il used to do things like this, offer small cosmetic measures as a sign of good faith when, in fact, such steps are neither complete nor verifiable nor irreversible.

There is a lot of talk now suggesting that, if only Trump would sign an end-of-hostilities declaration, Kim would let go of his nuclear weapons. I'm not convinced. You would have to believe Kim wants to give up nuclear weapons. Given the national identity of North Korea as a nuclear state, the role of nuclear weapons in underpinning the regime's legitimacy, and pervading North Korean society and culture, it seems unlikely Kim would relinquish it all for a peace declaration.

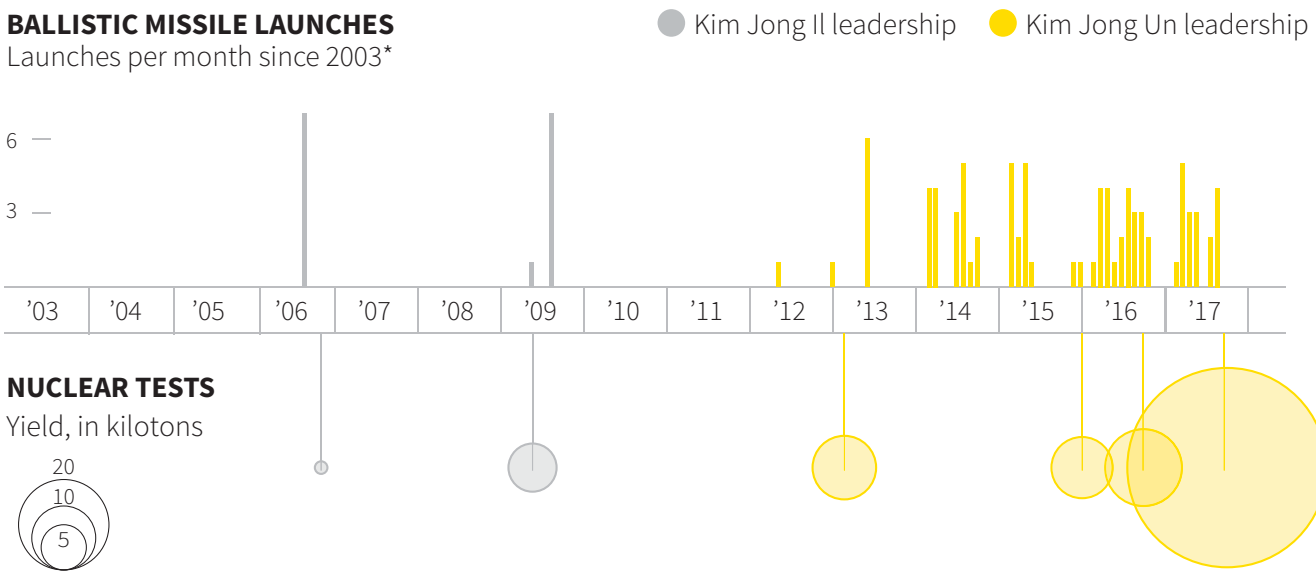
But we have to keep pressing the North Koreans. And we need a whole-of-government approach to test what Kim is really willing to do on the Singapore Declaration.

ROBERT EINHORN: I agree. It was never in the cards that Kim Jong Un would accept a rapid and complete denuclearization of North Korea. It is conceivable that North Korea would accept limitations, or even some reductions in its nuclear and missile capabilities, in exchange for security assurances and economic benefits.

Kim Jong Un is going to insist on "balanced" progress on each of the three main goals of the June 12, 2018 joint statement: the improvement of U.S.-North Korea relations, progress toward a peace regime on the Korean Peninsula, and progress toward complete denuclearization. The Trump administration wants concrete benefits before making concessions. But the bottom line is we simply don't have the leverage to compel North Korea to accept our demands.

Sooner or later, it will dawn on the administration that it is not going to get complete denuclearization. Then the administration has two options. The first is to accept a deal that limits but does not eliminate North Korea's nuclear missile programs in an agreed timeframe. The second is a long-term strategy of pressure, deterrence, and containment. This is going to be a very difficult choice for a president who said he was going to solve the North Korean issue once and for all.

TIMELINE OF NORTH KOREAN MISSILE AND NUCLEAR TESTS



*Includes both successful and failed launches; includes Satellite Launch Vehicles (SLVs).
Sources: The CNS North Korea Missile Test Database, Nuclear Threat Initiative; Center for Strategic and International Studies (CSIS); NORSAR; Reuters

W. Cai, 03/09/2017 REUTERS

MADELYN CREEDON: A peace declaration is a big thing for the North Koreans. It would give Kim Jong Un a second trophy, in addition to the first he got for completing a nuclear weapons program. It would be an achievement that eluded his grandfather, the guerilla fighter, and his father, too, who ruled for more than two decades. For a 35-year-old to say he completed North Korea's weapons program and brought peace to the Korean Peninsula wouldn't be bad deliverables for North Korea's impending 70th anniversary celebrations.

A peace declaration would also complicate ongoing negotiations. First, Kim can slow-roll whatever reciprocal moves he promises, and second, the series of processes and conversations that a peace declaration would kick off would turn the diplomatic conversation to non-nuclear issues, which helps Pyongyang cement its status as a nuclear weapons power. We need to think hard about unintended consequences.

JUNG PAK: On the other hand, South Korea has a deep interest in a peace declaration. So you have to wonder whether the United States will spark some seeds of discontent within the South Korean public and within the Moon Jae-in administration out of a sense that we are holding back reunification, which is written into the constitutions of both Koreas. When South Koreans talk about blood, brothers, and family reunions, is the United States going to be an obstacle? This tension plays into North Korea's desire to drive a wedge between the United States and South Korea. And that, in turn, doesn't bode well for a united effort on the nuclear issue.

BRUCE JONES: Do you see any shift in Beijing's attitude toward North Korea?

JUNG PAK: The Chinese have been very frustrated for the past seven years with North Korea because Kim kept them at arm's length while acting very provocatively. But the relationship has warmed more recently. Kim has visited China four times since the start of 2018. Kim is saying and doing the right things with his Chinese counterparts, which is to express admiration for their scientific and technological innovations, and promoting a China or Vietnam development model. Kim's father also said similar things about trying to learn from the Chinese on economic development, but this was largely an unrequited dream for China.

Kim does have to be careful about engaging too much with Beijing. He knows he's dependent on China, so his engagement with the United States and South Korea is motivated in part by a desire to balance China against the United States.

VI. IRAN AND THE MIDDLE EAST

BRUCE JONES: Let's turn to Iran. President Trump lived up to his campaign promise to walk away from the Joint Comprehensive Plan of Action. Where does this leave Iran's nuclear program?

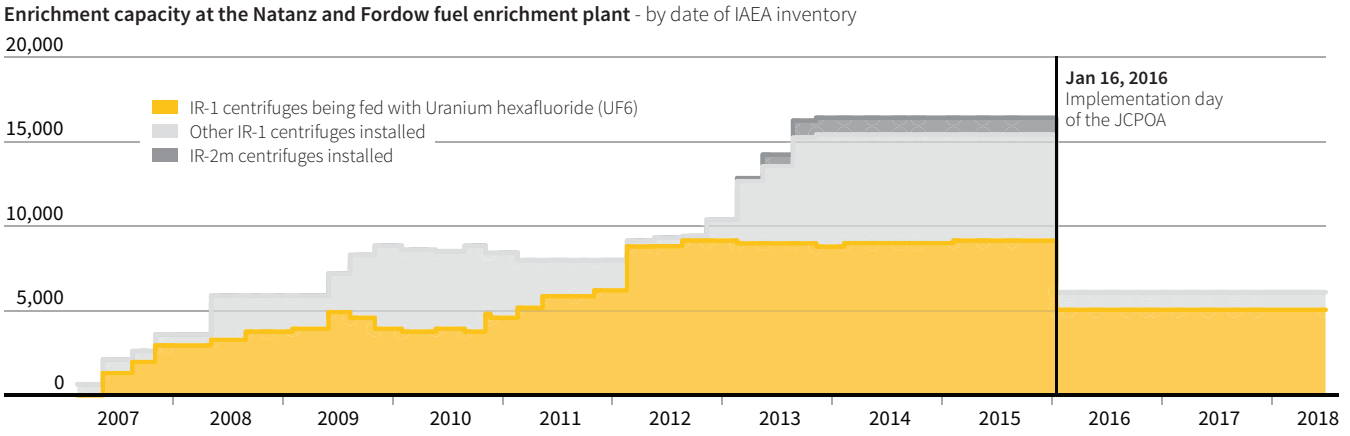
SUZANNE MALONEY: Despite the very significant economic penalty that Iran is paying for the reimposition of sanctions, it is continuing to abide by the terms of the deal. I think this won't hold forever. To some extent, the Iranians' patience is premised on a hope for changes in the American domestic political situation that facilitate a return to the deal.

I'm skeptical about that, and I think inevitably the Iranians can't hold on until 2020 or longer. The precipitous decline in the value of Iran's currency has exacted a political price in Tehran. There is a shortage of consumer products, and diapers are now being rationed. You have that all transpiring at a time of real political uncertainty within Iran. The gerontocracy is very quickly coming to a turning point. We observe a lot of anticipation around succession for the supreme leader, as well as the coming of age of the post-revolutionary baby boom at a time when mobile phones are ubiquitous and people are able to organize and express political grievances much more easily than they were at any other point in recent history. There is a lot of turmoil within Iran at a time when economic pressure is mounting.

The real question is whether the Iranians are going to try to take President Trump up on his invitation to engage in a negotiation. It appears that the president wants a bigger, better deal. He has been talking about this since he was on the campaign trail. It is not entirely clear whether the rest of his administration shares that objective or believes that it is realistic. The State Department has a new office that appears to be focused exclusively on ramping up economic pressure on Iran. There is a lot of support in the administration for a strategy that emphasizes regime change.

Iran is caught between a rock and a hard place—negotiating with a partner who has not proven reliable and with whom they have long-standing mistrust and antipathy, or trying to muddle through, wait out the American political calendar, and hope that they can forestall this mounting internal economic and political pressure.

TIMELINE OF IRANIAN ENRICHMENT CAPACITY



ROBERT EINHORN: I think there is a common thread that runs through the current administration's approach to North Korea and Iran: wildly unrealistic objectives and expectations.

There is tremendous pressure on Iran's economy, exacerbating Iran's current economic difficulties, but I don't think renewed sanctions will turn out to be as devastating as the previous rounds in 2012 and 2013. And they won't be enough to force Iran to accept Secretary Mike Pompeo's 12 demands on Iran's regional behavior, nuclear program, and domestic behavior.[1] The not-so-hidden agenda of many in the current administration is not really to negotiate a better deal; it's to destabilize the regime. It is therefore unlikely the Iranians will take up President Trump's offer to engage in negotiations.

BRUCE JONES: How seriously should we take the risk of further proliferation in the region if we continue on the current path? I'm thinking about Saudi Arabia and United Arab Emirates, in particular.

SUZANNE MALONEY: I'm relatively skeptical, in part based on a study that Bob Einhorn and Richard Nephew published in May 2016.[2] I think it still holds true, despite the rhetoric we hear from some of our long-standing partners in the region. They simply don't have the technological wherewithal to move quickly toward a serious nuclear weapons program.

ROBERT EINHORN: I also remain skeptical, but Saudi Arabia draws the most concern because it is the most motivated to achieve a nuclear capability. Senior Saudis have talked about matching whatever Iran does in this area. But they lack an indigenous human and physical infrastructure. Many people assume that Pakistan will somehow assist the Saudi program, but I don't believe that, especially now that Pakistan is seeking much better relations with Iran. Still, Saudi intentions depend, to some extent, on the role of the United States. The Saudis were horrified when President Obama walked back from his red line on using military force in response to the Syrian use of chemical weapons. Since then, signals by the Trump administration about reducing the American military presence in the region have reinforced for senior Saudi officials the idea that they need more strategic independence. Hence we've seen Saudi Arabia establish relationships with Russia and others in recent years.

1 Mike Pompeo, "After the Deal: A New Iran Strategy," (speech, Washington, DC, May 21, 2018), https://www.state.gov/secretary/remarks/2018/05/282301.htm.

2 Robert Einhorn and Richard Nephew, "The Iran nuclear deal: Prelude to proliferation in the Middle East?" (Washington, DC: Brookings Institution, May 2016), https://www.brookings.edu/research/the-iran-nuclear-deal-prelude-to-proliferation-in-the-middle-east/.

I would also add Turkey to the top of my watchlist. You have an autocratic leader who has great ambition for Turkey's role in the region. Finally, the countries that previously had nuclear programs—Syria, Libya, and Iraq—lack either the wherewithal or the ambition to go down this track.

VII. PROLIFERATION TO U.S. ALLIES

BRUCE JONES: Let's talk about Germany, Japan, and South Korea: three U.S. allies under the American nuclear umbrella that have either quietly or not so quietly begun having discussions about the need for their own nuclear capability in light of uncertainty about America's commitment to its alliances. In Germany, the Bundestag has had a conversation about a Eurodeterrent and a more general discussion of strategic autonomy. In Japan and South Korea, we see that debate happening much more quietly, but it is certainly happening. How seriously should we take this?

STROBE TALBOTT: Call me naïve, but there are so many cultural, historical, strategic, and political impediments to Germany going in that direction. I would also be surprised if France, Germany, and the United Kingdom could agree on a Eurodeterrent.

FRANK ROSE: In Europe, you already have two U.S. allies with nuclear capabilities, France and the United Kingdom, which limits the need for further proliferation. Plus, as Strobe notes, a variety of political and cultural reasons make it unlikely that we'll see another NATO ally develop a nuclear capability.

ROBERT EINHORN: I think what you're hearing in Germany is not a genuine interest in some autonomous German or European capability but a reaction to President Trump. It's a function of European and German resentment about the way the president has talked about NATO, withdrawal from the JCPOA, trade issues, and so forth. I think this is a temporary phase that could revert to a more traditional German stance in the future.

MADELYN CREEDON: I don't see nuclear proliferation in Germany.

BRUCE JONES: What about South Korea and Japan?

JUNG PAK: Just two or three years ago, neither the South Korean government nor the public felt like they had to develop their own nuclear weapons. South Korea had a covert nuclear program in the 1970s, but that arose out of a fear of U.S. abandonment, and was undertaken by an authoritarian government. Over time, South Korea renounced nuclear weapons in exchange for U.S. security assurances, and made the strategic decision that being a part of a U.S.-led order was beneficial to its economy and its engagement with the outside world.

The murmurs now are a result of not only the Trump effect and the questioning of U.S. alliances in general, but also because you have a progressive government in Seoul that values autonomy, including from the United States, and is therefore driving some of these conversations. South Korea also doesn't have the history of nuclear catastrophe like Japan, with the World War II experience and Fukushima. There are fewer "not in my backyard issues" in South Korea than Japan.

ROBERT EINHORN: Whether Japan and South Korea will ever go nuclear depends on two factors: the external threat and the reliability of U.S. security assurances. Of the two, the reliability of U.S. guarantees is much more important. Japan is worried about North Korea as well as China in the long term. South Korea is worried about North Korea. But even if those threats were not reduced, I think that if the United States could restore confidence in the reliability of our security guarantees, this would be sufficient to keep Japan and South Korea in the non-nuclear column. Both the previous and current administrations have worked very hard to reinforce extended deterrence in the mindset of our allies in Tokyo and Seoul and, I think, to a large extent they have been successful.

FRANK ROSE: Japan sits atop a dilemma. It is the only country where nuclear weapons have ever been used, but at the same time, nuclear weapons have undergirded its security for almost 70 years. There is strong public opposition to nuclear weapons in Japan, but I think the government has long recognized the importance of the extended U.S. deterrent. Despite enduring Japanese concerns about the effectiveness of the U.S. nuclear deterrent, the U.S. commitment to Japan's security remains robust at an operational level.

MICHAEL O'HANLON: When we pull back and talk about the state of these alliances, I'm struck that our treaty alliances and the foreign military presence of the United States have a durability that many other things don't. When people talk about what the "liberal international order" really means, I think treaty-based alliances are very high on that list. Notwithstanding the rhetoric from President Trump, the resilience in these alliances is noteworthy.

VIII. THE STATUS OF THE NON-PROLIFERATION REGIME

BRUCE JONES: What are the implications of the ongoing crises in North Korea and Iran for the global non-proliferation and arms control regime as a whole?

MICHAEL O'HANLON: Historically, the non-proliferation regime has not allowed any kind of deviation from the idea that only a certain small number of countries can have nuclear weapons and nobody else can ever touch them or aspire to them. In the case of North Korea, a partial deal of the type that Bob Einhorn mentioned could still be consistent with broader non-proliferation history and norms. We would not be giving North Korea a complete reprieve in exchange for eliminating its production infrastructure but keeping some of its warheads. If we kept some of the sanctions in place, suspended or relieved other sanctions, and provided some security assurances while limiting our diplomatic engagement in other ways, I think one could argue this is still consistent with the broader non-proliferation regime. Partial forgiveness would still uphold our commitment to principle.

SUZANNE MALONEY: This is where we have a problem with how the current administration has reacted to Iran. Fundamentally, the administration has determined that partial forgiveness won't make for a viable or durable bargain, at least with respect to the United States and Iran. I think this will make it very difficult to negotiate anything that looks like a partial forgiveness deal with any other country again, and certainly with the Iranians.

Iranian Foreign Minister Mohammad Javad Zarif (L), International Atomic Energy Agency (IAEA) Director General Yukiya Amano and the High Representative of the European Union for Foreign Affairs and Security Policy Federica Mogherini arrive at the United Nations building in Vienna, Austria, January 16, 2016. REUTERS/Leonhard Foeger

MICHAEL O'HANLON: Even though I support the JCPOA and certainly would have preferred that we stay in it, the United States may remain a credible negotiator despite its new approach to Iran for two reasons. First, the JCPOA was a strangely temporary kind of understanding that was not really consistent with how most non-proliferation deals were done historically. They don't say, you have to be good for 10 years and then you can sin thereafter. We debate in the United States whether that sunset provision was necessary, but no one would say it was a good part of such a deal.

Second, we have the delinkage concept, that we could basically close our eyes to Iran's disruptive regional behavior in order to secure a deal. Critics will say, "Come on, Iran is causing mischief in four or five countries in the broader region and we're giving them more resources with which to cause mischief." President Trump has a point that delinkage was a bit of a stretch. President Obama, at times, suggested he didn't fully believe in delinkage either. He hoped that the JCPOA would lead to Iran rethinking its broader priorities.

For all its sins, North Korea is not destabilizing its region day-to-day in the same manner that Iran is.

SUZANNE MALONEY: It's interesting that in the divergent approaches of Presidents Trump and Obama to the Iranian nuclear question, there is a fundamental presumption that there has to be some sort of political change within Iran to make the deal durable over the long term.

For Obama, there was a political calculation that a globally integrated Iran would see greater incentives for nuclear cooperation and for modulating its behavior around the region. For Trump, the political calculation is that the nature of the regime has to change entirely either through capitulation or regime change. In both administrations, there is this conviction that there has to be an ideological conversion in the Iranian regime to make denuclearization or long-term non-proliferation viable.

This invites an interesting question—does durable non-proliferation rely on the modulation of adversarial tensions?

BONNIE JENKINS: The Iran and North Korea situations make me question whether we can pursue arms control the way we used to. Can we make the same kinds of commitments as before?

During the Cold War, when we were working with the Soviet Union, we understood that the regime wasn't necessarily going to change. Nevertheless, fundamental concerns about arms control and nuclear weapons led to compromise. Despite the flaws in the JCPOA, Iran was abiding by the terms of the agreement. But the addition of Pompeo's 12 demands sent the message to Iran that, in order for us to work with you on nuclear non-proliferation issues, you also have to change the character of your regime. How are other countries going to work with us in the future?

U.S. NUCLEAR POLICY AND CAPABILITIES

IX. U.S. NUCLEAR POLICY

BRUCE JONES: How would you characterize the coherence of U.S. nuclear policy today? Are policymakers successfully adapting to the new arms control environment created by great power competition?

MICHAEL O'HANLON: I'm struck by how quickly the policy context of nuclear weapons has changed as geopolitics have evolved. In the late 2000s, Washington had a big debate over and substantial opposition to the so-called reliable replacement warhead. Ultimately, this project was discontinued, without testing. In contrast, the 2018 Nuclear Posture Review, which recommended the development of one or two new types of warheads that would not require testing, received some opposition but the debate died down very fast. We're in a much different place. Moreover, the 2018 Nuclear Posture Review contained practical recommendations that largely resembled the policies of the previous administration.

FRANK ROSE: In my assessment of the 2018 Nuclear Posture Review, I conclude that there was a lot of continuity between the nuclear modernization programs of the previous and current administrations.[3] The additions to the previous administration's modernization program were minimal: modifying the D-5 warhead, modifying the yield on one of the warheads, and then potentially reintroducing the sea-launched cruise missile. Those are not major changes.

The biggest challenge this administration faces on nuclear policy and modernization is the president's rhetoric. While the current administration has essentially ratified the previous administration's modernization program, my concern is that many Democrats, especially ones that are not really focused on nuclear issues, see this as the Trump modernization program. But this is bigger than any one administration or one political party.

Moreover, we face the fundamental challenge that while President Trump's rhetoric is over the top, I don't think his rhetoric on arms control is all that different from mainstream Republican thinking. What we have seen over the last 20 years is, for the most part, a complete collapse of Republican support for arms control. So, one of the questions now is, how do you regenerate bipartisan consensus for arms control?

The previous administration developed a bipartisan consensus on nuclear issues built on two pillars: strategic nuclear arms control with Russia through the New START treaty, and the modernization of the U.S. strategic deterrent. I call them "two halves of the same walnut."[4] It is very difficult to see how the previous administration would have been able to get New START over the finish line in the Senate had they not agreed to increase funding for Department of Defense infrastructure and to modernize U.S. strategic nuclear delivery systems.

But many Democrats have significant concerns about the current modernization program. The current administration could build a bipartisan consensus, at least in the near term, by extending New START. And this is more important now with Democratic control of the House.

The Titan Missile, shown from above during a tour of the 103-foot Titan II Intercontinental Ballistic Missile (ICBM) site which was decommissioned in 1982, at the Titan Missile Museum in Sahuarita, Arizona, U.S., February 2, 2019. REUTERS/Nicole Neri

3 Frank Rose, "Is the 2018 Nuclear Posture Review as bad as the critics claim it is?" (Washington, DC: Brookings Institution, April 2018), https://www.brookings.edu/research/is-the-2018-nuclear-posture-review-as-bad-as-the-critics-claim-it-is/.

4 Frank Rose, "'Two halves of the same walnut': The politics of New START extension and strategic nuclear modernization," *Brookings Institution*, August 30, 2018, https://www.brookings.edu/blog/order-from-chaos/2018/08/30/two-halves-of-the-same-walnut-the-politics-of-new-start-extension-and-strategic-nuclear-modernization/.

MICHAEL O'HANLON: It doesn't have to be all or nothing on modernization. I don't think that we can keep just keep adding money to the defense budget and close our eyes to the fact that we have a trillion-dollar-a-year federal deficit. At some point, we're going to have to come back to reality. When we do so, we have to avoid giving the sense that modernization is all or nothing.

FRANK ROSE: The president's rhetoric also poses challenges with our allies. It is important to note that one of the reasons why we have been able to maintain consensus for nuclear deterrence in some European and Asian capitals is that nuclear deterrence has been very closely linked with arms control and non-proliferation. In places like Germany, the Netherlands, and Norway, nuclear weapons are very unpopular politically. The fact that the United States was pursuing arms control and non-proliferation allowed these governments to message to their populations that while they are investing in dual-capable aircraft and supporting alliance deterrence polices, they are also focusing on non-proliferation.

BONNIE JENKINS: I agree. The 2018 Nuclear Posture Review is largely similar to the 2010 Nuclear Posture Review. However, the current administration's rhetoric has caused significant concern in the arms control community.

The previous administration rallied international support for eventual global denuclearization. The current administration, on the other hand, has upended some standing norms by, for example, publicly stating that the United States will not ratify the Comprehensive Nuclear-Test-Ban Treaty.

MADELYN CREEDON: Policy evolutions in nuclear arms take decades. Once you set something in motion, it's not going to change for a while. I think that our allies are reassured by the fact that U.S. modernization programs span different administrations and represent a long-term security commitment. The plan for all of the life extension programs is very clear, and the programs are funded.

Our allies have seen substantial investments in, and tangible progress on, the life extension of the W-76 warhead for the D-5 submarine missile, new submarines, new bombers, and the nuclear certification of the Joint Strike Fighter. The modernization of the B-61 bomb is next, and NATO in its own way has embraced it. After that, we'll see additional modernization of warheads designed for cruise missiles, submarines, and ICBMs.

But I have at least two concerns. First, I'm worried that the 2018 Nuclear Posture Review put so much emphasis on the Department of Defense and delivery systems, but very limited focus on the modernization of Department of Energy infrastructure. This modernization is harder because the National Nuclear Security Administration's (NNSA) budget constitutes a far larger share of the Department of Energy's budget than nuclear programs do at the Department of Defense. I'm also worried about the carelessness with which we discuss small nuclear weapons and tactical warfighting. I don't worry about an autonomous response of nuclear weapons in large systems, but I am concerned about autonomous responses in various small systems. The way that Russia and some folks in the current U.S. administration have talked about the need for small nuclear weapons for tactical purposes is very dangerous. Even such discussion is damaging to global arms control efforts.

FRANK ROSE: This is a hard issue. The biggest problem is that the Russians have shown very little interest in any type of transparency concerning non-strategic nuclear weapons and non-strategic arms control. When we think about next steps with Russia, the Senate has been very, very clear that if the executive branch comes back to the Senate with a new arms control agreement with Russia, it needs to include non-strategic nuclear weapons.

MADELYN CREEDON: I wouldn't go bilateral, I'd expand the agreement to include China. I wouldn't bother with just Russia unless it is an agreement focused on non-strategic nuclear weapons.

BRUCE JONES: Do the Chinese have an interest in joining such talks?

FRANK ROSE: Not right now.

X. THE NEXT GENERATION OF NUCLEAR EXPERTS

BRUCE JONES: What do we need to do to expand the cadre of younger scholars, scientists, and employees of the labs to ensure that we have the kind of capability that we need in the next generation?

MADELYN CREEDON: I think the bigger question is whether there is a broader understanding of deterrence and nuclear weapons and strategic stability in the general population.

BRUCE JONES: Aren't these two distinct questions that probably both need answers?

MADELYN CREEDON: Yes, but you need a shared global understanding of deterrence and strategic stability to inspire the next generation. But at a more practical level, what keeps the labs healthy is good science with appropriate funding. When the labs bring people in, they bring them in for their basic scientific skills in engineering or physics. Over time, scientists either go into the weapons program or don't. Keeping the NNSA labs and plants healthy is absolutely essential. You need a population of scientists and engineers with the requisite technical skills to draw from.

KATE HEWITT: Younger generations who grew up after the end of the Cold War are not having this conversation. It's important that we start engaging students at the high school and college levels if we want to ensure future generations can participate in this public debate. I've traveled around the country to discuss nuclear policy issues with high school and college students and assessed the baseline knowledge to be almost nothing, though there was clear interest among the students for more information in order to better understand current events and headlines related to nuclear issues.

FRANK ROSE: One challenge has been that funding for nuclear issues has really been targeted at disarmament and non-proliferation. There is very little money coming from foundations focused on deterrence and strategic stability, and that needs to change.

We also need to find a way to bring younger people into the government to work on these issues. This was a fundamental struggle for me when I was assistant secretary of state. There were many smart young people but we did not have the authority to bring them into the government. That has to change.

BONNIE JENKINS: I think we could debate how much broad public understanding of these issues there ever truly ever was. But I do agree we need to encourage more interest and participation, especially among underrepresented populations. It's heartening to see a lot of younger women working on these issues. There's a lot more we can do.

BRUCE JONES: Indeed. And I certainly hope this fascinating conversation helps inspire more young people to jump into the field. Thanks very much to all of you.

POST-INTERVIEW ADDENDUM: THE INTERMEDIATE-RANGE NUCLEAR FORCES TREATY

BRUCE JONES: How does the Trump administration's decision to withdraw from the Intermediate-Range Nuclear Forces Treaty affect the current state of arms control, deterrence, and non-proliferation?

STROBE TALBOTT: In my opinion, it was a grave mistake for the Trump administration to withdraw from the INF Treaty. Washington will bear the political consequences for the treaty's collapse. The Trump decision might well benefit Russia's geopolitical scheming by driving a greater wedge between the United States and its European allies. After all, the trans-Atlantic controversy over "Euromissiles" in the 1970s and 1980s was the main incentive for the United States to reassure Europeans that the Soviet Union would not have a nuclear advantage over the continent and the U.K. Given President Trump's repeated skepticism about NATO's very existence, the allies have even more concern.

Without the INF Treaty, the United States will have to determine how to deter Russia from unilaterally deploying INF missiles to the NATO-Russia border. It seems unlikely that the United States could match that deployment when our European allies will be reluctant to host INF systems. Even if U.S. deployment to Europe were feasible, that action could trigger an arms race with Russia that would profoundly destabilize the region.

Components of SSC-8/9M729 cruise missile system are on display during a news briefing, organized by Russian defence and foreign ministries, at Patriot Expocentre near Moscow, Russia January 23, 2019. REUTERS/Maxim Shemetov

FRANK ROSE: I have long believed that it was unlikely that Russia was going to return to compliance with the INF Treaty. Indeed, back in 2004-05, the Russians proposed that Washington and Moscow jointly withdraw from the treaty, arguing that it no longer reflected the current security situation in Eurasia. On top of that, the United States had been engaging Russia diplomatically on the INF issue since 2013 in an attempt to induce Russia to return to compliance. None of those efforts—under both the Obama and Trump administrations—made any progress. Therefore, I fully understand the Trump administration's decision to exit the treaty.

However, if the administration was going to exit the treaty, they needed to do it in a way that placed the blame for killing the treaty squarely on Russia, and kept the NATO allies united. Unfortunately, the administration's initial announcement of the decision failed on both counts. The key question now is whether the Trump administration can manage the demise of the INF Treaty in a way that allows us to maintain a level of strategic stability with Russia and keeps the NATO allies united. I think the jury is out on both points.

MADELYN CREEDON: Indeed, Russia has been in violation of the INF Treaty since 2014, putting the United States in a difficult position with respect to future of the treaty. The hope is that U.S. withdrawal is part of a larger strategy to deal with Russia and China, avoid or limit reintroduction of this class of missile in Europe, and sort out the proliferation of these missiles in the Indo-Pacific. Is a real strategy with an implementation plan hiding behind the decision?

If not, then many questions will require serious discussion on a number of questions. Where would the United States deploy these new ground-based missiles should it decide to do so? And most importantly, what will our allies do, what do they want, and what will they allow the United States to do? Would a new arms race in intermediate-range missiles undermine strategic stability?

I hope that a clear strategy does exist and withdrawal is not just another example of a general distrust of arms control and other multilateral agreements, or worse, a conscious decision to start a missile arms race. If there is no strategy, Russia wins and the United States will pay the price for a short-sighted decision.

APPENDIX: SIGNIFICANT TREATIES AND AGREEMENTS ON NUCLEAR WEAPONS

NAME	DATE	TERMS	SIGNATORIES	STATUS
Outer Space Treaty	January 27, 1967	Designates outer space as the province of mankind and prohibits states from placing objects with nuclear weapons or other WMD into orbit.	89 signatory states; 107 states parties.	Still in force.
Treaty on the Non-Proliferation of Nuclear Weapons (NPT)	July 1, 1968	Establishes the basis of international cooperation on stopping the spread of nuclear weapons by promoting disarmament, nonproliferation, and peaceful uses of nuclear energy.	93 signatory states; 191 states parties.	Still in force. More states have ratified the NPT than any other treaty on arms limitation and disarmament.
Intermediate-Range Nuclear Forces (INF) Treaty	December 8, 1987	Requires the destruction of ground-launched ballistic and cruise missiles with ranges of 500-5,000km as well as the missiles' launchers and support structures.	The United States, the Soviet Union, and its successor states (Russia, Belarus, Kazakhstan, and Ukraine).	The United States suspended its obligations of the treaty on February 1, 2019.
Strategic Arms Reduction Treaty (START I)	October 31, 1991	Established limits of 1,600 delivery vehicles and 6,000 warheads (divided into three subcategories); established limits for the throw-weight of ballistic missiles; and banned new types of heavy ICBMs and SLBMs.	The United States, Russia, Belarus, Kazakhstan, and Ukraine.	Entered into force December 5, 1994; Expired December 5, 2009.
Comprehensive Nuclear-Test-Ban Treaty (CTBT)	September 24, 1996	Prohibits all explosive testing of nuclear weapons.	183 signatory states; 164 states parties, not including the United States.	Entry into force still pending.
New START	April 8, 2010	Establishes standards on further nuclear reductions and limitations on offensive arms to by met by February 5, 2018.	Russia and the United States.	The treaty is in force until 2021, but can be extended for an additional five years.

Joint Comprehensive Plan of Action (JCPOA)	Adopted October 18, 2015; implemented January 16, 2016	Limits Iran's nuclear capabilities, technologies, and delivery systems.	Iran, Russia, China, France, the United Kingdom, the United States, and the European Union.	The United States unilaterally withdrew from the JCPOA in May 2018. In January 2019, U.S. intelligence officials testified before Congress that Iran is still complying with the terms of the agreement.
Treaty on the Prohibition of Nuclear Weapons (Nuclear Ban Treaty)	July 17, 2017	Prohibits the use, threat of use, development, production, manufacturing, acquisitions, possession, stockpiling, transfer, stationing, and installment of nuclear weapons or assistance with any such activities.	69 signatory states; 19 states parties.	Entry into force still pending.

ABOUT THE PANELISTS

MADELYN CREEDON

Madelyn Creedon was most recently principal deputy administrator of the National Nuclear Security Administration (NNSA) within the Department of Energy, a position she held from 2014 to 2017. She also served in the Pentagon as assistant secretary of defense for global strategic affairs from 2011 to 2014, overseeing policy development in the areas of missile defense, nuclear security, cybersecurity, and space. She served as counsel for the U.S. Senate Committee on Armed Services for many years, beginning in 1990. During that time, she also served as deputy administrator for defense programs at the NNSA, associate deputy secretary of energy, and general counsel for the Defense Base Closure and Realignment Commission. She started her career as a trial attorney at the Department of Energy. Following retirement from Federal Service in 2017, Creedon established Green Marble Group, LLC, a consulting company and currently serves on a number of advisory boards related to national security. She recently completed a fellowship at the United States Study Center at the University of Sydney. She holds a J.D. from the St. Louis University School of Law, and a B.A. from the University of Evansville.

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Robert Einhorn is a senior fellow with the Brookings Institution's Arms Control and Non-Proliferation Initiative and the Center for 21st Century Security and Intelligence. During his career at the U.S. Department of State, Einhorn served as assistant secretary for non-proliferation during the Clinton administration and as the secretary of state's special advisor for non-proliferation and arms control during the Obama administration. At Brookings, Einhorn concentrates on arms control, non-proliferation and regional security issues (including Iran, the greater Middle East, South Asia, and Northeast Asia), and U.S. nuclear weapons policies.

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Kate Hewitt is a research assistant in the security and strategy team at the Brookings Institution. Her research portfolio includes nuclear weapons, arms control, and emerging technology policy. Previously, she was a Herbert Scoville Jr. peace fellow at Brookings where her research focused on mitigating nuclear threats from Iran and North Korea. She was awarded the 2018 Leonard M. Rieser Award for co-founding a project to educate the next generation of experts on nuclear policy in high schools across the United States. Hewitt was a community and organizational development adviser in Peace Corps Moldova, and has held internships with the Massachusetts Institute of Technology's policy office in Washington, and with Energy Northwest. Hewitt sits on the board of advisors for GirlSecurity, is a contributing author for Inkstick Media, and is a 2018 nuclear security innovators fellow. She holds an M.A. in global studies from the University of North Carolina at Chapel Hill and a dual B.A. in political science and philosophy from Gonzaga University.

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Michael O'Hanlon is senior fellow and director of research in the Foreign Policy program at the Brookings Institution. He has conducted frequent field research in Iraq and Afghanistan over the past dozen years, as well as various studies on U.S. national security policy in his quarter-century career at Brookings. He was a Peace Corps volunteer in the Democratic Republic of the Congo as well, and runs Brookings' Africa Security Initiative. His newest book is *The Senkaku Paradox: Risking Great Power War over Small Stakes* (Brookings Institution Press, forthcoming).

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Bonnie Jenkins is the founder and executive director of Women of Color Advancing Peace, Security and Conflict Transformation, and a nonresident senior fellow at the Brookings Institution. From 2009-17, she was an ambassador at the U.S. Department of State (DOS) where she was the coordinator for threat reduction programs. She was also the U.S. representative to the G-7 Global Partnership and the DOS lead to the Nuclear Security Summits. Jenkins was a program officer at the Ford Foundation and a counsel on the National Commission on Terrorist Attacks Upon the United States (9/11 Commission). Jenkins worked at the Arms Control and Disarmament Agency in the Office of General Counsel and is a retired Naval Reserves officer. She holds a Ph.D. from the University of Virginia; an LL.M. from Georgetown University; an M.P.A. from the State University of New York at Albany; a J.D. from Albany Law School; and a B.A. from Amherst College. She was also a fellow at the Belfer Center at Harvard University.

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