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The INF Treaty: A Spectacular, Inflexible, Time-Bound Success

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Abstract

The Intermediate-Range Nuclear Forces (INF) Treaty between the United States and the Soviet Union was a triumph of US and NATO nuclear deterrence and diplomatic strategies, bringing Moscow to the negotiating table and leading both superpowers to agree to completely and verifiably dismantle two classes (shorter-range [500–1,000 km] and intermediate range [1,000–5,500 km]) of nuclear-capable, ground-launched cruise and ballistic missiles. Three decades later, the treaty is in peril, with the United States announcing in February 2019 its intent to withdraw if the Russian Federation does not dismantle its treaty-violating SSC-8 missile. While Russia's decision to violate the treaty catalyzed the present crisis, the context within which the treaty was negotiated has significantly changed since the late 1980s. The article discusses how these changes—the growth in shorter-range and intermediate-range (IRBM) missile arsenals in third states, the breakdown in the Cold War consensus on arms control, and the changing dynamics of US-NATO extended deterrence and assurance—led first Moscow and then Washington to reevaluate the merit of the INF Treaty. It concludes that the treaty's relative rigidity may play a key role in its undoing and suggests that future arms control negotiations develop more flexible and resilient mechanisms of review, dispute resolution, and verification.

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The Intermediate-Range Nuclear Forces (INF) Treaty between the United States and the Soviet Union, entered into force in 1988, was the product of a set of circumstances unique to the era of Cold War superpower confrontation. As circumstances changed in the years after the collapse of the Soviet Union in late 1991, the Russian Federation, successor to the accord, increasingly chafed at the treaty's blanket, global

prohibition on shorter-range (500–1,000 km) and intermediate-range (1,000–5,500 km) ground-launched ballistic and cruise missiles.[1] In 2007 Moscow sought, with the United States' blessing, to convince other states to either consider joining the accord or unilaterally implement its dismantlement provisions.[2] When this attempt at diplomacy failed, the Kremlin decided to covertly violate the treaty by developing and testing the SSC-8 (Russian designation 9M729), a dual-capable, ground-launched intermediate-range cruise missile.[3]

The United States' detection of this missile, and subsequent decision in 2014 to publicly charge Russia with failing to comply with the treaty, led to a slow-motion crisis characterized by Russia's categorical refusal to admit to any wrongdoing (and persistent efforts to claim that the United States was cheating on the accord). On 2 February 2019, US Secretary of State Mike Pompeo announced that the United States was suspending its obligations under the treaty and would exercise its right to withdraw in six months unless the Russian Federation dismantles its illegal missiles (several battalions of which are now deployed) and returns to full compliance with the treaty.[4] As this appears unlikely, the treaty may terminate as of early August 2019.

What led to the demise of this groundbreaking treaty, which was the first agreement to allow US and Russian personnel to conduct on-site inspections of each other's bases housing nuclear-capable delivery systems (among other locations), and which ultimately resulted in the verifiable dismantlement of hundreds of these platforms?[5] The treaty reflected the statecraft and strategic calculus of two rival superpowers that were simultaneously committed to geopolitical competition and avoiding a nuclear conflagration. It focused on banning two specific classes of missiles that were high-end capabilities in the 1980s, posing an assurance crisis for one superpower and a deterrence crisis for the other. Its negotiation and terms were powerfully shaped by the specific circumstances and context of the late Cold War era.

Consequently, the INF Treaty proved both wildly successful in its time yet wholly inflexible to the sweeping changes that reshaped extended deterrence and assurance dynamics. It became out of sync with American and Russian views on strategic stability and arms control and the role of shorter-range and intermediate-range ballistic missiles (IRBM) on the global stage in the decades after the end of the Cold War. This article first assesses how these changes strained (and will likely break) the INF Treaty. It then discusses how future nuclear arms control agreements can be designed to better adapt to changing circumstances. The INF Treaty's suc-

cessful negotiation, effective implementation, slow erosion, and ultimate collapse provide important insights into the current parlous state of nuclear arms control and future negotiations aimed at reducing nuclear risk.

A Soviet Missile and NATO Assurance Crisis

The INF Treaty resolved the "Euromissile" crisis that roiled the NATO alliance from 1979 to the treaty's signature in 1987. While the origins of the crisis were complex, its proximate cause was the Soviet Union's development and deployment in the late 1970s of the SS-20 Pioneer, an intermediate-range, solid-fueled ballistic missile launched from a mobile transporter-erector-launcher (TEL). From locations in western Russia, the SS-20 could range virtually all of the European member states of NATO. But the SS-20 was not a new or novel threat; the Soviet Union had possessed the capability to strike European member states with nuclear weapons, to include intermediate-range missiles, for decades. Why did the SS-20 spark a crisis for the alliance?

The new delivery system raised concerns not because the alliance was unfamiliar with Soviet nuclear threats but because it was significantly more capable than the SS-4 and SS-5 intermediate-range missiles it replaced. The latter two types, initially deployed in the early 1960s, could carry a single warhead and required their liquid fuel be loaded shortly before launch. Many were also silo-based rather than launched from TELs.[6] The SS-20 was mobile, used solid fuel, could carry up to three warheads, and was more accurate than its predecessors. As a result, it represented a missile that was faster, more lethal, and harder to track than SS-4s and SS-5s.[7]

The challenge the SS-20 posed to the alliance, however, went beyond the fact that the missile was a significant upgrade over the Soviet Union's older intermediate-range systems. Its deployment in the late 1970s came at a time when NATO European leaders were becoming more anxious about the strength of the US commitment to their defense. It created a crisis of confidence in the credibility of the United States' commitment to defend NATO in all circumstances, up to and including a major nuclear conflict with the Soviet Union. Concerns about the United States' willingness to defend the alliance were not new, but they became acute with the deployment of the SS-20. Paradoxically, some of these concerns sprang from the limited progress of US-Russian strategic nuclear arms control talks.[8] Lengthy and laborious Strategic Arms Limitation Talks (SALT) between the United States and Soviet Union had led each side to sign two ground-breaking agreements in 1972: the SALT Interim Agreement and

the Anti-Ballistic Missile (ABM) Treaty. Further talks led the United States and Soviet Union to negotiate and on 18 June 1979 sign SALT II, an agreement that placed numerical ceilings on each side's strategic delivery systems and multiple independently-targetable reentry vehicles (MIRV).[9]

SALT II would never be ratified by the United States Senate, but the limited progress made by the two superpowers in the 1970s on arms control for strategic offensive and defensive systems posed a dilemma to NATO European leaders. They became increasingly concerned that US policy makers might be prepared to overlook, neglect, or barter away the alliance's security if doing so reduced the nuclear threat the Soviet Union posed to the US homeland. If the two superpowers could agree to balance their most powerful nuclear forces, would the United States consider abandoning its European allies in a crisis or conflict if it now believed that it enjoyed a stable nuclear deterrence relationship with Moscow? SALT, ABM, and SALT II did not initiate the latter concern. Members of the alliance worried throughout the Cold War about "decoupling" and whether in a future conflict the United States would consider accepting a Soviet land grab on the continent rather than mounting a vigorous defense in mainland Europe against the invaders. Choosing the latter could result in the conflict escalating up to Soviet missiles being launched against the US homeland (a dilemma often framed in the form of some variant on the question "why would the United States risk New York for Bonn or Paris?"). The seeming thaw in superpower relations represented by strategic arms control talks heightened NATO European leaders' fear that their own interests might be sacrificed in the interest of superpower realpolitik.[10]

These factors—the not new but heightened threat posed by the SS-20 and a tangled set of anxieties associated with the specific dynamics of superpower competition and détente during the 1970s—led European NATO leaders to press the United States for greater reassurance regarding its extended deterrence commitments to the alliance. With an eye toward the rough equality the superpowers were negotiating on numbers of strategic nuclear forces, they rallied behind West German chancellor Helmut Schmidt's 1977 call for the alliance to also realize parity with regard to the military balance in Europe.[11] Given the Soviet Bloc's numerical advantage in conventional forces and its ongoing overhaul of its theater nuclear capabilities, Germany and other key members of the alliance argued that this parity could best be achieved by new US dual-capable intermediate-range missiles stationed in Europe.[12] The allies expressly lobbied for new US delivery vehicles that could range the Soviet Union from NATO bases in the United Kingdom and Western Europe, rejecting a US proposal to

field new short-range nuclear delivery systems that would replace aging platforms of this type already deployed on the continent.[13] They believed that it was essential to hold Soviet, rather than just Warsaw Pact, targets at risk.[14] In the view of the NATO allies, these US systems ensured that both superpowers were fully invested in (and vulnerable to) the potential risks and costs of escalation and brinkmanship within the European theater.

At the same time, these leaders also recognized that their publics were deeply concerned about the risk of nuclear war and the probability that such a conflict would devastate Europe. (Indeed, in the years to come, these concerns would give rise to disarmament movements that would shake a number of their governments.) They pressed the United States to both bolster NATO's theater nuclear deterrence capabilities and commit to pursue arms control negotiations with the Soviet Union aimed at limiting theater nuclear forces.[15] The United States agreed to this "dual-track" deterrence and diplomacy strategy, and on 12 December 1979 a special meeting of NATO's foreign and defense ministers confirmed the alliance's commitment to "pursue these two parallel and complementary approaches to avert an arms race in Europe caused by the Soviet TNF [theater nuclear forces] build-up, yet preserve the viability of NATO's strategy of deterrence and defense and thus maintain the security of its member States."[16]

To meet the requirements of the first track, the United States agreed to deploy IRBMs—Pershing II mobile intermediate-range ballistic missiles and BGM-109 Tomahawk intermediate-range ground-launched cruise missiles (GLCM)—in Europe to directly counter the Soviet SS-20s. To demonstrate alliance solidarity, numerous NATO European states agreed to host these US intermediate-range missiles, to include West Germany, the United Kingdom, Italy, Belgium, and the Netherlands.

As a result, the US decision to develop and deploy intermediate-range platforms was a direct response to NATO European allies' requests for assurance rather than an effort to fill some type of gap within the United States' nuclear deterrence strategy, posture, or force structure. Indeed, in the late 1970s and early 1980s US commanders in Europe were generally satisfied that the existing nuclear forces at their disposal (which included thousands of short-range and air-delivered weapons, supplemented by 400 Poseidon submarine-launched ballistic missiles [SLBM] designated for European contingencies) were sufficient for the purposes of theater nuclear deterrence.[17] Importantly, even as the United States was preparing to deploy new intermediate-range missiles to bases in Europe, no serious consideration was made of stationing these platforms elsewhere in the world to deter the Soviet Union or its proxies. For the United States, Soviet

intermediate-range nuclear missiles were a serious concern due to the threat they posed to its European NATO allies and to the large numbers of US forces stationed in Europe. But they did not significantly affect the tentative balance of nuclear deterrence between two superpowers that possessed many other means to hold each other at risk.

In addition to bolstering the theater nuclear-deterrent capabilities of the alliance, the US Pershings and ground-launched Tomahawks also strengthened the hands of US negotiators at the arms control talks that represented the second part of the dual-track approach. The alliance was determined to demonstrate to the Soviet Union that there was no way it could "win" a competition in intermediate-range missiles and that the best solution, amenable to both sides, was to agree to negotiate an arms control treaty stabilizing and limiting this threat (initially, the idea of a total ban seemed far-fetched and was not placed on the table). NATO's commitment to arms control negotiations on intermediate-range systems was also considered important for domestic political reasons, with large domestic antinuclear protests placing pressure on several European governments.[18]

Thus, the origins and contours of the INF negotiations were inextricable from how the dynamics of 1970s and 1980s superpower competition and détente affected the security perceptions and assurance requirement of NATO's European leaders and their publics. The dual-track approach was a tightrope balancing act for the alliance but ultimately proved successful. It was driven by NATO European leaders such as Schmidt who requested a specific type of weapon and were willing to host it, even in the face of significant domestic opposition (indeed, it would cost Schmidt his job as chancellor in 1982).[19] For the United States, the missiles met an alliance assurance, rather than a US military, requirement. A US Department of Defense official involved in the alliance's deliberations during this time later noted that a military rationale for the missiles was never seriously discussed. He remarked, "In all the discussions with the [NATO High Level Group] and in Washington, I never heard any mention of what any of these missiles might be targeted against, other than Soviet territory. *Having* them was all that was important for deterrence. In the end, the United States spent $10 billion of its own money for these 572 missiles, deployed them for only three years, and then dismantled them" (emphasis in original).[20]

The value of the intermediate-range ballistic and cruise missiles to the alliance was not in their military utility but in their ability to demonstrate the alliance's transatlantic unity in the face of Soviet coercion. For the United States, the missiles assured its skittish NATO European allies

while also strengthening the hand of its negotiators, who could present the Soviet Union with the dilemma of having to accept a higher degree of vulnerability as the price paid by rejecting offers to limit (and later, fully eliminate) these types of missiles. It proved to be a logical, balanced, and ultimately highly successful approach to a difficult assurance challenge, and the completion and ratification of the treaty in 1987–88 was universally cheered by members of the alliance.[21]

Shorter- and Intermediate-Range Missiles in the late Cold War

At the time of the 1 June 1988 entry into force of the INF Treaty, the United States and Soviet Union fielded the world's most capable ballistic and cruise missiles. The Soviet Union also represented the most important supplier of missiles to other states; in particular, the Soviet Scud-B 300 km short-range ballistic missile (SRBM) and its variants were the most common missiles in third-country missile fleets.[22] The US and Soviet shorter-range and intermediate-range missile fleets dismantled under the treaty were at the top of two very small classes of delivery systems.

In the late 1980s and early 1990s, unclassified US government and nongovernment analyses concluded that only eight states were capable of producing missiles with ranges greater than 300 km either indigenously or with limited foreign assistance.[23] Moreover, of these eight, North Korea and India had not yet deployed IRBMs; India first successfully tested its Agni missile (which would eventually become a family of SRBMs and IRBMs) in 1989, and North Korea's tests of its Hwasong-6/Scud-C shorter-range ballistic missile and Nodong-1 IRBM did not occur until 1990 or later.[24] Other countries pursuing mostly indigenous shorter- or intermediate-range missile programs in the 1980s, such as Argentina and Brazil, faced both internal challenges and external pressure that ultimately led both states in the 1990s to abandon their efforts to build these types of systems.[25] This in turn may have derailed or short-circuited other states' ambitions to acquire or develop delivery systems beyond short-range missiles (for example, Argentina's Condor-II IRBM was linked with Egypt's and Iraq's interest in improving the capabilities of their missile fleets).[26] In 1987 Saudi Arabia purchased the CSS-2 (also known as DF-3) IRBM from China but was likely only able to operate the missiles with considerable Chinese assistance.[27] It did not attempt to reverse-engineer the missile, and as of the mid-2000s its operational status may still have relied on Chinese help.[28]

Concerns about missile proliferation led the United States and several of its closest and most technologically adept allies (the then "G-7" states)

to form the Missile Technology Control Regime (MTCR) in April 1987, a few months prior to the December signing of the INF Treaty.[29] Members of the regime, which would grow steadily over time, agreed not to sell or otherwise transfer key components, technologies, or completed systems of missiles that could carry a 500 kg warhead 300 km.[30] With nuclear and WMD warheads generally understood to be heavier than 500 kg (~1,000 kg was often used as a default estimate for the weight of a nuclear warhead) and 0–300 km representing the range of a short-range missile, the regime was intended to limit the international market for, and potential proliferation of, missiles to short-range delivery systems carrying conventional warheads. The MTCR's restrictions posed major (if not insurmountable) hurdles to actors outside of the regime's participating states that wished to develop more capable, longer-range missiles and likely complicated and delayed the development of several intermediate-range missile programs.

By mid-1991, when the United States and Soviet Union completed the INF Treaty's mandated dismantlement of their shorter-range and intermediate-range missile arsenals, effective, accurate missiles of these types largely remained the preserve of the two superpowers and a handful of close US allies. While missile proliferation and development were key US security concerns (as evidenced by the United States and its G-7 allies forming the MTCR and then lobbying other technologically advanced states to join), Washington hoped that a combination of the regime, the INF Treaty (which had additionally stipulated the United States and Soviet Union could not transfer any shorter-range or intermediate-range missiles prior to their destruction), and diplomatic pressure could effectively curtail the ambitions of other states seeking to develop and deploy longer-range missiles. Furthermore, at the time of the negotiation of the INF Treaty the United States' operating assumption was that the superpower rivalry, while undergoing a welcome period of cooling, would endure. Within this construct, the Soviet Union and its bloc allies would remain the primary military threat to the United States and its allies for the foreseeable future; by extension, the INF treaty's global elimination of two classes of Soviet missile systems removed the greatest near- to medium-term shorter-range and intermediate-range missile threats.

Moreover, the Soviet Union appears to have reached a similar conclusion with regard to its own security interests. The Kremlin viewed the US Pershing IIs and Tomahawk BGM-109s as particularly dangerous US capabilities that could potentially launch a sudden, devastating surprise attack on its command and control (to include perhaps decapitating its leadership).[31] The INF Treaty's elimination of these missiles thus also directly

addressed a major concern of the Soviet Union regarding the threat posed by these types of delivery systems. Soviet political and military leaders may also have viewed resources spent on ground-based intermediate-range nuclear forces as better used for improving other types of conventional weapons, giving Moscow another reason to eventually agree to the "zero" option that eliminated all of these systems on both sides.[32]

At a 6 May 1991 ceremony marking the last elimination of US systems covered by the treaty, Maj Gen Robert W. Parker, USAF, director of the US On-Site Inspection Agency, emphasized the importance of the two sides successfully implementing the accord: "Please remember that what we are witnessing is not just the passing of this noble weapon system, but also an important milestone in an historic agreement between the two most powerful nations on earth."[33] Both sides hoped the total elimination of their respective ground-launched shorter-range and intermediate-range missile fleets had, for the foreseeable future, removed the threat posed to each party by these types of delivery systems.

Nuclear Arms Control and Strategic Stability in the 1970s and 1980s

The SALT Interim Agreement and ABM Treaty established key principles and parameters for the formation of a stable nuclear deterrence balance between the two Cold War superpowers. These principles were codified by these agreements and the Strategic Arms Reduction Treaty (START) signed on 31 July 1991, just 11 weeks after the ceremony marking full US implementation of the INF Treaty. The logic of strategic arms control framed and informed negotiations of the INF Treaty but also kept the latter, and the missiles it dismantled, separate from the concepts and calculus of superpower "strategic stability." The erosion of both this logic and a shared understanding between Washington and Moscow of this form of stability would spell trouble for the treaty three decades later.

The key principles of strategic nuclear arms control and strategic stability were initially developed by scholars such as Thomas Schelling and Henry Kissinger and then refined over the course of tough negotiations between the United States and Soviet Union that began in earnest in the late 1960s. Before these talks could commence, however, the two sides had to reach some tacit agreements on the basic parameters of these negotiations. The first and most important agreement was that, despite their bitter rivalry, arms control talks were necessary and beneficial to both sides. In an era of scientific and technological breakthroughs such as the intercontinental ballistic missile (ICBM) and the atomic (and then hydrogen) bomb, both

superpowers, despite their animosity, had a common interest in avoiding a mutually devastating nuclear war. This recognition informed efforts to negotiate accords such as the "Hot Line" agreement after the Cuban missile crisis, instituting basic confidence-building measures that created a foundation for future arms control talks. A second—and closely related—agreement was that there were high risks and costs to both sides of continued, unfettered nuclear arms racing, and thus each party had an interest in reaching an agreement to slow or otherwise limit their arms competition.

These tacit agreements brought the superpowers to the table for nuclear negotiations in the late 1960s, but the two sides still needed to determine how they could achieve some form of stable balance between their growing and diversifying nuclear arsenals. Both sides rejected the prospect of total nuclear disarmament; each believed it needed to field a nuclear force to deter the other. Each superpower recognized that it had sufficient nuclear forces to destroy the other several times over, however, and by the late 1960s was prepared to discuss the possibility of placing a ceiling on its deployed nuclear forces. At the same time, both sides also feared the possibility that the other might prepare for, and seriously contemplate, launching a sudden, surprise attack—a massive nuclear first strike—in an effort to knock out and defeat their opponent, potentially within the first hour of conflict. In short, both sides needed to deter the other, but in numbers, structure, and posture their forces could neither invite nor precipitate a nuclear attack. What both superpowers sought was "strategic stability"—a stable, balanced form of mutual deterrence between their respective nuclear forces that could control the burgeoning arms race while also sharply reducing the likelihood of either side viewing any benefit to engaging in nuclear brinkmanship or considering launching a nuclear attack. This stability had two components: "arms race stability," whereby both sides could agree to slow, limit, or halt their nuclear arms competition, and "first strike stability," whereby both sides believed the other had no incentive to attack first and each possessed a nuclear force capable of delivering a devastating riposte (a second strike) in response to any nuclear attack.

This understanding of the potential benefits of mutual nuclear deterrence provided a lodestar for superpower arms control negotiations. But each side fielded large, diverse nuclear forces spread across multiple platforms and locations. How could they limit and scope negotiations? The answers informed the first nuclear arms control agreements reached by the two superpowers—the SALT I Interim Agreement and the ABM

Treaty—and set the standards for subsequent strategic nuclear arms control talks and treaties.

With regard to their respective arsenals, the two sides agreed that their "strategic" nuclear delivery systems represented the armaments most central to any assessments or comparisons of the relative strength or weight of their respective nuclear arsenals. Delivery systems were considered strategic if their range allowed them to initiate a nuclear attack from a location far distant from their target (in time, this was fixed as 5,500+ km). This designation was applied to each side's ICBMs, SLBMs, and long-range bombers. These three types of platforms came to be known as the triad; due to their speed (ballistic missiles could hit the opponent's homeland in 30 minutes) and power (by the 1970s, for example, ICBMs and SLBMs could carry multiple warheads, while long-range bombers could carry multiple bombs and, later, multiple air-launched cruise missiles) they were viewed as the delivery vehicles posing the greatest threat to each side. These delivery systems thus became the focus of efforts to realize a strategic nuclear balance between the superpowers.

This agreement was not easily reached, as the Soviet Union initially sought to also capture US nuclear delivery systems based in Europe. But US negotiators argued forcefully, and ultimately successfully, that these systems—including nuclear artillery, short-range missiles, and fighter-bombers—were not a threat to the Soviet homeland (which most of them could not range). As a result, all "nonstrategic" delivery systems, to include shorter-range and intermediate-range missiles, were separated from the strategic nuclear arms control talks between the superpowers. Inasmuch as both sides recognized their criticality in theaters such as Europe, these delivery systems were set aside as less relevant to fears of nuclear Armageddon and less strategically valuable then their larger, faster, and more powerful strategic cousins.

Attempting to negotiate a cap on strategic nuclear delivery vehicles, however, was not possible without both sides also agreeing to limit antiballistic missile systems that could, in theory, provide a shield against incoming ballistic missiles. Neither side could agree to limit its offensive strategic nuclear forces if it feared that its rival possessed the defensive means to destroy these delivery vehicles before reaching their targets. This capability would not only wreak havoc with any attempt to balance numbers of deployed delivery systems, it could also give rise to fears that one side might initiate a first strike in the belief that the other's remaining forces would be soaked up by a layer of strategic defenses in the form of antiballistic missiles. In the absence of any limits on strategic defenses,

however, each side had a strong incentive to pursue them; the United States began designing its Safeguard antiballistic missile system in 1968, and the Soviet Union began deploying antiballistic missile systems around Moscow in the late 1960s.[34]

Limits to strategic defenses were thus directly intertwined with efforts to place a ceiling on strategic nuclear delivery systems, and the ABM Treaty and SALT I Interim Agreement were negotiated in parallel and signed at the same time. The former placed a limit on each side's antiballistic missile systems (initially 200, later changed to 100 at one base), and the latter placed temporary limits on the numbers and construction of ICBMs and SLBMs, with each side pledging to continue negotiating to reach a more permanent arrangement on offensive systems.[35]

While Cold War strategic arms control negotiations were far from simple or straightforward, they contained a shared understanding of common goals including strategic stability, a mutual view of key principles governing nuclear deterrence and balancing (such as the central importance of limiting strategic defenses), and an agreement on what to include—and what to leave out—of strategic arms control talks. This commonality helped establish a framework for negotiations and a template for treaties that would endure into the post–Cold War era with the 1994 START agreement. It would also ensure that other nuclear-delivery systems, to include those later subject to the negotiation and promulgation of the INF Treaty, were treated as separate from the logic and calculus of Cold War strategic stability.

The End of an Era

Three years after its entry into force, the treaty had fully realized its primary zero-zero objective and had completely dismantled all US and Soviet shorter-range and intermediate-range missiles. A few months later the Soviet Union would collapse. The United States considered the now-independent Soviet republics to be successor states of the treaty. Several did not have any obligations under the accord, but six (Russian Federation, Belarus, Kazakstan, Turkmenistan, Ukraine, and Uzbekistan) had at least one site subject to inspection. The United States viewed four as active participants in the treaty, inasmuch as the United States and Russian Federation were recognized as the primary players.[36] On-site inspections continued until May 2001 when, per the terms of the treaty (which mandated inspections for 13 years after its entry into force), they came to an end.[37]

The treaty then entered into a caretaker phase. The United States and Russian Federation continued to exchange a handful of required notifica-

tions each year through their respective Nuclear Risk Reduction Centers, the central communication nodes for exchanging information on the INF Treaty and other agreements. While the Special Verification Commission (SVC), the bilateral forum expressly established by the treaty to resolve any disagreements over its implementation, remained on the books, its meetings became less frequent as for several years after the closeout of inspections there were no treaty-related disputes or issues to resolve.[38] In the early 2000s, the treaty represented an unqualified success.

A few years later, however, the United States began to suspect Russia was violating the treaty. In 2013 it confronted Russia on its testing of the SSC-8, in 2014 it informed its allies of the violation, and in early 2019 it announced its readiness to withdraw if Russia continued to violate the treaty.[39] Russia responded with a lengthy list of spurious allegations that it was the United States that was the violator, not Russia.[40] A treaty forged in the crucible of the Cold War superpower confrontation in Europe proved too inflexible for the complex tensions and torsions of the twenty-first century's dynamic geopolitical environment.

In retrospect, the INF Treaty successfully addressed multiple interdependent variables; when these variables changed, it became unbalanced in the views of its two major parties. Many of the factors critical to bringing Washington and Moscow to the negotiating table in the 1980s had changed, and the perspective and value associated with the accord in both capitals also differed.

Post–Cold War Shorter-Range and Intermediate-Range Missiles

In the post–Cold War era, shorter-range and intermediate-range ballistic and cruise missiles have increased in quantity, quality, and strategic value. These increases were not linear and did not involve a large number of states. But the states that pursued these capabilities included major and regional powers, creating issues and challenges for both the Russian Federation and United States that were unanticipated during the 1980s INF negotiations.

The National Air Intelligence Center's (NAIC) *Ballistic and Cruise Missile Threat* and Congressional Research Service's *Missile Survey* have chronicled these developments during the post–Cold War era. The 1999 NAIC report, for example, lists five countries (China, India, Pakistan, North Korea, and Iran) as pursuing IRBMs but found that only China had produced missiles of this type that were operationally deployed.[41] By 2000, the report listed one additional IRBM (North Korea's Nodong) as deployed; three years later, the Nodong was joined by Pakistan's Ghauri

and Iran's Shahab-3 IRBMs, but overall numbers of deployed systems remained relatively limited.[42] The 2003 report also listed five states with shorter-range missile programs: China, North Korea, India, Egypt, and Iraq.[43]

The 2005 CRS *Missile Survey,* which covers all states regardless of their relationship with the United States, listed one Slovakian shorter-range ballistic missile (without noting its status), one Chinese shorter-range ballistic missile as deployed, and two Egyptian shorter-range ballistic missiles of uncertain status. It also found, however, that seven countries now either deployed IRBMs or had programs under development (listing three Chinese IRBMs as deployed, four Indian IRBMs in development, three Iranian IRBMs in development, one Israeli IRBM as deployed and one in development, one North Korean IRBM as deployed and three in development, four Pakistani IRBMs as in development, and one Saudi IRBM system [from China, as noted above] that was "possibly not operational").[44]

Moscow watched this slow but steady growth of shorter-range and intermediate-range missiles in a number of Eurasian states with growing concern. If sometimes halting in their progress, the overall advancement of these missile programs led the Kremlin to question whether the INF Treaty was still in Russia's best interest. In 2005 Russian foreign minister Sergei Ivanov spoke with US officials about possibly leaving the accord.[45] He would later publicly refer to the treaty as a "relic of the Cold War."[46] At the 2007 Munich Security Conference, Russian Federation president Vladimir Putin stated, "Today many other countries have [shorter-range and intermediate-range ground-launched] missiles, including the Democratic People's Republic of Korea, the Republic of Korea, India, Iran, Pakistan and Israel. Many countries are working on these systems and plan to incorporate them as part of their weapons arsenals. And only the United States and Russia bear the responsibility to not create such weapons systems. It is obvious that in these conditions we must think about ensuring our own security."[47]

Speaking at the same conference, Ivanov predicted that the treaty "will not last forever."[48] Russia asked the United States if it would be open to jointly abrogating the treaty; the United States was not prepared to retire the pact, but both states agreed they would float the idea of having other countries join. In October 2007, the United States and Russia issued a joint statement at the United Nations marking the INF Treaty's 20th anniversary and appealed to other countries to "discuss the possibility of imparting a global character to this important regime."[49] The appeal proved unsuccessful. China and other states fielding or developing shorter-range or intermediate-range missiles were uninterested in, or flatly opposed

to, dismantling systems considered important to their security (to include for the purposes of deterring major powers such as Russia and the United States).

The uneven growth but persistent pursuit of IRBM and other missile capabilities by many of these actors continued over the next decade. By 2017, six states fielded shorter-range ballistic missiles and six states fielded IRBMs. Several of these states had robust, mature programs, to include the following:

- China fields six types of shorter-range ballistic missiles and four IRBMs, such as the road-mobile, dual-capable antiship DF-26 IRBM. First unveiled in 2015, the missile was described by China's official media (quoting unnamed Chinese military officers) as an "aircraft carrier killer."[50]
- In addition to Iran possessing "the largest inventory of ballistic missiles in the Middle East" per reporting by the United States Intelligence Community (including two shorter-range ballistic missiles and three IRBMs at various stages of development and deployment), Maj Gen Ali Jafari of the Iranian Revolutionary Guard Corps stated in October 2017 that Iran fields missiles reaching "2,000 kilometers and that can be increased, but we believe this range is enough for the Islamic Republic as most of the U.S. forces and most of their interests in the region are within this range."[51]
- North Korea has one shorter-range ballistic missile (the 500 km Scud-C) and five IRBMs at various stages of development or deployment, having conducted its first flight tests of the Bukkeukseong-2 and Hwasong-12 IRBMs in 2017, and has boasted that these missiles allow it to strike US bases across the Asia-Pacific.[52]

These developments pose a number of challenges to the United States and its allies. First, the MTCR and other US-led efforts to counter missile proliferation may have succeeded in limiting the numbers of actors that develop, sell, and field shorter-range and intermediate-range missiles, but it did not prevent a number of states from building (and subsequently improving) these types of missile fleets. Indeed, rogue actors such as North Korea and Iran have proven willing to take significant risks, and incur substantial costs, to pursue these types of delivery systems. Lacking the resources to develop expensive strike platforms such as fifth-generation aircraft, these states turned to these types of ballistic and cruise missiles

as an alternative to give them the ability to launch attacks against more sophisticated opponents.[53]

Second, while US missile defenses continue to improve, the substantial cost difference between theater-range offensive missiles (to include in the form of shorter-range and intermediate-range missiles) and the defensive missiles that can intercept them continues to strongly favor the attacker. In the near- to medium-term, the United States and its allies will field defensive systems such as the PAC-3 and THAAD against these types of missiles, but offenses will continue to retain a numerical advantage. Passive defenses (such as hardening potential targets) can also play an important role in defending against missile strikes, but they cannot fully address potential vulnerabilities, particularly against adversaries that can build and field large numbers of missiles. As such, there are not defensive means to negate all the shorter-range and intermediate-range missiles within the arsenals of states such as Iran and North Korea, so these missiles will likely remain an appealing strike option for both.[54]

Third, beyond the rogue states, shorter-range and intermediate-range missiles are also an important part of China's and Russia's armed forces (to include the latter's INF-violating SSC-8). Both states have closely analyzed the US way of warfare with an eye toward finding ways to counter and defeat it. They recognize that in recent contingencies and conflicts the United States has fully leveraged advantages—such as the ability to rapidly achieve air dominance and flow forces into the theater at little to no risk to US bases and platforms—to dismantle and defeat enemy armed forces. Shorter-range and intermediate-range missiles, particularly when dual capable and carried by mobile TELs, however, can place US bases and forces in-theater at risk of attack from the outset of a potential conflict. This threat complicates the ability of the United States to generate ISR and strike sorties, move reinforcements, and otherwise operate key high-value platforms (such as aircraft carriers) to quickly and decisively respond to provocation or aggression against itself or its allies.[55] As such, missiles such as China's DF-26 and Russia's SSC-8 represent important capabilities within both states' broader antiaccess/area denial (A2/AD) strategies.[56]

These developments have also led the Trump administration to reconsider the potential merits of systems banned by the INF Treaty. If US air and naval platforms for cruise missiles face increasing risk in future operating environments, ground-based systems may provide a valuable option to both offset adversary systems of this type and hold adversary A2/AD assets (and the forces and infrastructure they are designed to protect) at risk.

As such, should the United States withdraw from the treaty in August 2019, it is prepared to move forward with research and development on conventional intermediate-range ground-launched systems.[57]

In sum, shorter-range and intermediate-range missiles, which did not pose a threat to either Washington of Moscow in 1991, increasingly became a challenge to both states, leading them to again view ground-launched intermediate-range systems as an important strike system (Russia) and potential future strike option (United States).

Extended Deterrence and Allied Assurance, Post–Cold War

NATO's European leaders had greeted the arrival of the SS-20 in the 1970s with alarm. As described above, the missile, and extended deterrence questions it raised, led them to seek renewed and revitalized demonstrations of assurance in the form of US intermediate-range missiles. They were the chief advocates for the US Pershing IIs and ground-launched Tomahawks and pressed for the alliance's dual-track approach.

By contrast, when the United States informed NATO in January 2014 that Russia was in violation of the INF Treaty due to tests of the SSC-8/9M279, the news was met with expressions of concern but not consternation by its European allies.[58] In general, the European members of the alliance viewed the Russian violation as an arms control compliance problem rather than a security threat, and hoped that US diplomacy would persuade Moscow to fully abide by the treaty. The appearance of the missile did not catalyze an alliance-wide assurance crisis. By early 2019, however, the Trump administration concluded that Russia's continuing violation of the treaty and deployment of multiple SSC-8 battalions, combined with the United States remaining bound by the treaty, was untenable for the purposes of US national security and the requirements of extended deterrence.

Why did the United States and its European allies react differently to the SSC-8 than to the SS-20? The United States had not viewed the SS-20 as a major threat to its extended deterrence posture in Europe. The dual-capable SSC-8, however—when combined with other Russian theater nuclear assets, conventional forces, and A2/AD capabilities—became viewed as a potential threat to US efforts to deter Russian plans and strategies of coercion and aggression in Europe.

The SSC-8 joins several other types of currently operational, dual-capable Russian platforms that can launch nuclear attacks in-theater. By comparison, while NATO has three members that field nuclear forces, for the purposes of theater nuclear deterrence the alliance relies on one type

of platform (fighter-bomber aircraft, often termed "dual-capable" aircraft [DCA]) that in a notional future nuclear crisis could be armed with only one type of weapon (US B61 gravity bombs, potentially carried by US and other allied DCA). Unclassified estimates suggest a significant disparity between the arsenals of US and Russian nonstrategic nuclear weapons. A January 2019 Congressional Research Service report estimates that the United States has 500 of these weapons (with perhaps 200 in Europe) while Russia possesses 1,000 to 6,000.[59] With the SSC-8 potentially further bolstering Russia's theater nuclear capabilities, the Kremlin may feel emboldened to use its nuclear forces for the purposes of coercion and aggression against NATO.[60] Russia has already issued a number of veiled and overt nuclear threats against NATO partners and allies in recent years, and it may view the SSC-8 as another means to threaten political, economic, and military targets across the territory of NATO's European states.[61] Moreover, should a future NATO-Russian conventional conflict begin to go badly for the Kremlin, the SSC-8 might be employed by Moscow to launch a theater nuclear strike to force a hard stop on NATO operations (and perhaps convince US and European political leaders to come to the negotiating table).[62]

The SSC-8 is also the latest example of Russia's ongoing integration of conventional, dual-capable, and nuclear platforms into a military force designed to challenge NATO within the murky, competitive grey zone between peace and war, and, if necessary, prevail in a limited, regional armed conflict. With Russia developing and upgrading layered defenses against NATO air assets, for example, the Kremlin may believe it can shield future operations along its borders and even into NATO territory from US and NATO aircraft and surface ships. If so, it may conclude that it can launch swift, accurate nuclear or conventional attacks against key NATO forces or bases from platforms such as the SSC-8 deep within its own territory at little risk to these assets. In addition, with the nuclear or conventional status of the SSC-8 likely unknown, Russia may also believe US and NATO commanders will be reticent to act against these platforms out of concerns that attacking them could inadvertently cause a conventional fight to escalate into a nuclear conflict—an ambiguity the Kremlin might be happy to leverage in a future crisis.

Beyond its direct military utility, all of the above considerations underline the challenge the SSC-8 poses for the purposes of extended deterrence. Its deployment provides Russia with an accurate, mobile, dual-capable intermediate-range strike asset that may cause it to reevaluate the cost-benefit assessments of various actions against NATO, from low-level

mischief and malfeasance up to possible theater nuclear strikes in a future conflict. Among other targets, it can range bases and airfields in Europe critical to the potential US response to attacks against its NATO allies. To whatever degree the SSC-8 gives Russia additional confidence that it can continue to violate treaties and undertake actions such as the illegal annexation of Crimea with impunity, it could undermine ongoing US efforts to deter Moscow from seeking to strain, crack, and possibly combat the alliance.

NATO's European members were publicly united in joining the United States in condemning Russia's violation of the INF Treaty and then supporting Washington's stated intent to withdraw in February 2019.[63] Not all members of the alliance, however, had initially agreed with the United States' assessment that the treaty could not be saved. Germany, for example, lobbied the United States in late 2018 to allow additional time for diplomacy (thus pushing back the date of the US announcement).

Even though deployed, the SSC-8 has not triggered an existential assurance crisis for the alliance. Europe in 2019 is not territorially divided between two superpowers and their proxies, with both sides poised to wage mass conventional (and potentially also nuclear) war across Central Europe. Russia is a serious security challenge, particularly in the wake of its illegal seizure of Crimea in 2014, but perspectives across the alliance differ (in most cases, reflecting the specific party's geographic proximity to Russia) on how best to counter Russia. Across the alliance, however, most nations first seek conventional means of reassurance. They have cheered measures such as the European Reassurance Initiative, which has brought additional rotations of US conventional forces to Europe to beef up NATO planning, training, and exercise efforts, with a focus on the alliance's eastern flank.[64] With Russia meddling in the cyberspace domains and domestic elections of NATO states and using exotic radioactive and chemical weapons for assassinations on their sovereign territory, alliance members also seek support and reassurance to counter a broad swathe of Russian actions that are malign but fell short of actual armed conflict.

Unlike in 1979, allies did not press the United States to either develop or deploy its own intermediate-range, ground-launched nuclear-capable platform to counter the SSC-8. Indeed, some countries were wary of having to field a future request from the United States to place these types of systems in Europe, and Germany's foreign minister stated his flat opposition to hosting US nuclear-armed intermediate-range missiles in December 2018.[65] A recognition that US European allies have concerns about the placement of additional nuclear-capable platforms and/or weapons in Europe has already led the United States to conclude that pursuing two

offshore theater nuclear options (a low-yield SLBM warhead and a potential new sea-launched nuclear-armed cruise missile) represents the best means to bolster NATO's theater nuclear forces in response to the SSC-8.[66] Allies broadly support this approach (publicly communicated in the US 2018 *Nuclear Posture Review*) with new US intermediate-range ground missiles developed as non-nuclear, conventional strike options.

In addition, for a number of allies a larger concern than the SSC-8 per se is the broader breakdown of strategic stability and, by extension, the erosion and demise of various arms control and confidence-building measures between the United States and the Russian Federation. Arms control treaties, and particularly the INF, are viewed by a number of NATO allies as important to establishing a relative peace between Washington and Moscow that ensures Europe will not get trampled in any future wrestling match between these two titans.[67] As such, even if the INF Treaty represented a largely inactive and increasingly ineffective treaty, it had critical symbolic importance to many of NATO's European members as an accord that played a key role in banishing, for a time, the specter of major power nuclear brinkmanship and conflict in Europe. In this regard, a significant number of NATO states viewed the INF Treaty as buttressing an important facet of European security and had hoped it could be repaired rather than withdrawn.

The contemporary assurance needs of NATO European states are thus multivariate and complex, are not limited to the Russian nuclear threat, and at present are also playing out against the backdrop of tensions in the alliance over matters such as budget contributions. The SSC-8 is thus one of several headaches facing the alliance. When its existence was revealed by the United States to the rest of NATO in 2014, it was viewed differently than the news of the SS-20's deployment, which in the late 1970s appeared to NATO European leaders as both a fundamental threat to the alliance's theater nuclear deterrence posture and a delivery system that could drive a wedge between its European members and its largest, most capable military power. For the United States, in contrast, the Trump administration's evaluation of the SSC-8, when combined with Russia's other nonstrategic nuclear forces and its integration of nuclear and conventional force for the purposes of challenging NATO, led it to conclude the now-deployed missile posed a serious threat to the US approach to extended deterrence in Europe. Together with Russia's increasingly poor record of compliance with arms control treaties and international law, these factors caused the administration to determine that it could not indefinitely remain in a treaty that constrained the United States but did

nothing to halt Russia from further deployments of a highly capable platform.[68]

Loss of Consensus on Strategic Stability

The shared agreement between the United States and Soviet Union that a stable mutual deterrence relationship could be governed by agreements on offensive and defensive strategic forces—and that by extension, other platforms, including those covered by the INF Treaty, could be treated as an important but separate problem set—eroded in the post–Cold War era.

For the United States, the logic of this approach remained valid so long as both parties continued to field robust, survivable strategic nuclear delivery systems capable of launching a devastating retaliatory counterattack against the other party even after a massive first strike. US strategists observe that the Russian Federation continues to field large numbers of ICBMs, SLBMs, and long-range bombers capable of promptly attacking the US homeland while also devoting significant resources to modernizing these systems and developing new strategic delivery vehicles. As such, for most of the post–Cold War era the United States has stated that it views the status quo of mutual nuclear deterrence, and the strategic stability associated with it, as continuing to apply to the US-Russia relationship for the foreseeable future.[69]

Russia disagrees. Beginning with the US withdrawal from the ABM Treaty, President Putin and his military leadership became increasingly convinced that the United States is determined to take steps to undermine Russia's strategic deterrent as part of broader efforts to give Washington a free hand to interfere within Moscow's sphere of influence, undermine (externally and internally) its ruling regime, and generally relegate it to the sidelines as a second-tier power.[70] Russia's concerns go beyond missile defenses; its strategists paint a dark picture whereby the United States contemplates waging full-spectrum warfare against Russia. This scenario envisions the US using space and cyberspace weapons as well as advanced precision-strike platforms to cripple Russia's command and control, knock out its strike platforms (with a focus on its strategic nuclear forces), and then negate a ragged, disorganized second strike with a globally networked system of national and theater missile defenses. For the Kremlin, this nightmare scenario is not only plausible, it also inherently undermines its ability to deter the United States from a broad range of actions well short of major conflict between the two powers. It fears that if Washington

dismisses Russia's nuclear forces, it will be emboldened to challenge Moscow everywhere (and will not hesitate to intervene anywhere).

Russia thus accuses the United States of walking away from a shared concept of the importance of maintaining an offense-defense balance that was central to the concept of strategic stability and past efforts at negotiating nuclear arms control agreements. It also argues that this abandonment of a core principle of strategic stability, coupled with improvements to US conventional strike systems, has collapsed any useful distinction between the strategic value and deterrence role of intermediate-range and strategic-range systems. If American cruise missiles launched from various platforms can quickly and lethally strike Russian nuclear forces deep within its borders, it contends, these systems are now part of cost-benefit calculations associated with weighing the merits of a first strike.[71] These concerns blend with Russian accusations that NATO theater missile defense sites in Eastern Europe can be converted from firing missile interceptors to launching cruise missiles against Russian nuclear assets.[72]

The United States has countered the above charges with technical evidence and strategic arguments that US conventional strike systems and theater missile defenses are not intended for, and lack the capability to, negate Russia's strategic nuclear deterrent. It has also pushed back against Russia's unsubstantiated claims that the United States has violated the INF Treaty (claims that only emerged after the United States confronted Russia with its violation of the accord).[73] For its part, Russia's failure to comply with, or fully respect, a number of treaties and agreements has led the United States to reexamine its views on strategic stability. If Russia can brazenly violate agreements such as the INF Treaty to realize a military advantage, and leverage this advantage as part of a broader effort to compete with the United States, then "strategic stability" between strategic nuclear forces may be a narrow and outmoded view of what constitutes a stable strategic relationship between Washington and Moscow.

As a result, both the United States and Russia, albeit following different logic, have concluded that the INF Treaty, and the missiles it banned, cannot be viewed as entirely separate and distinct from the architecture and understandings of strategic stability and strategic nuclear arms control. In addition, the tacit and formal agreements on strategic nuclear deterrence that provided a broader framework for negotiating the INF Treaty and other nuclear arms control treaties have eroded, are in dispute, or—in the case of New START—are due to expire.

A Purpose-Built and Inflexible Accord

The strategic context and concepts informing the negotiation of the INF Treaty in the mid- to late 1980s significantly changed over the course of the next three decades. These changes placed the treaty under stress in the post–Cold War era.

On the potential eve of the end of the treaty it is important to recognize that in its negotiation and initial years of implementation, the pact represented a major success for the United States and NATO. The accord combined elements of deterrence and diplomacy to realize a critical US and allied security objective by eliminating Soviet shorter-range and intermediate-range ground-launched missiles. This dual-track approach is a potential template for how to effectively and simultaneously deter and negotiate with a nuclear-armed adversary.

It is also critical to recognize that the INF Treaty is not the only agreement that the Russian Federation has chosen to violate; indeed, the Kremlin has castigated the treaty and other agreements dating from the late Cold War and early post–Cold War period as undercutting Russian security interests. For the current generation of Russian political and military leaders, the accord is emblematic of a time (now past) of comparative weakness and uncertainty regarding their country's place in regional and global affairs. These headwinds were likely to place the treaty in jeopardy regardless of its other merits.

With the INF Treaty in perhaps its terminal phase, however, it is instructive to assess how the architecture and implementation of the treaty itself may have made it vulnerable to outside forces. In turn, this assessment can help inform future efforts to develop treaties and agreements on nuclear arms control.

Treaty Implementation, Violations, and Anomalies

In both architecture and implementation, the INF Treaty has features that render it unique. It was crafted with a distinct goal in mind: it is the only bilateral nuclear arms control treaty that prohibits and eliminates, rather than merely limits, entire categories of nuclear-capable delivery systems.

Architecture

First among the treaty's distinct features is its overall duration provision, stipulating indefinite implementation provided no party withdraws—the treaty itself never expires (Article XV defines it as "of unlimited duration").

The majority of bilateral arms control agreements, by contrast, are commonly negotiated to be of finite duration. Countries show a distinct aversion either to tying their hands or planning for the future when negotiating these types of accords.

Second, while the INF Treaty itself does not expire, its abolition of shorter-range and intermediate-range ground-launched missiles, launchers, and support equipment outlived state party rights to conduct verification inspections. Per the treaty's Protocol on Elimination, ground-based missiles, launchers, and support equipment were all to be eliminated within a three-year period for perpetuity. As noted above, however, the treaty's Protocol on Verification required on-site inspections to end 13 years after the treaty's entry into force. The design of the treaty assumed that confidence would be sufficiently established, and uncertainty adequately diminished, at the time both arsenals of missiles covered by the treaty were eliminated, allowing for the effective retirement of the pact's inspection regime. As such, the treaty was crafted both in its time and for its time, presuming détente (or at least mutual agreement on a stabilizing approach to theater nuclear deterrence) would remain in place for the long term.

Third, the treaty's SVC, intended to "resolve questions relating to compliance" and facilitate other discussions on the "viability and effectiveness" of the treaty, was an ad hoc body that would convene upon request of one of the two participating states to address specific disputes.[74] During the treaty's initial phase of implementation, it met regularly and was considered an effective tool in the resolution of ambiguities and disputes. Its long-term role and mandate, however, was left vague and open to interpretation.

Fourth, the treaty had no provision for a regular review conference, no standing working group meetings for maintaining the integrity of the treaty, and no mechanism for modernization (such as some means for reviewing how evolving technologies might affect the classes of missiles it eliminated and/or change the value of these delivery systems in light of other types of weaponry). When the SVC met regularly, it served some of these purposes by resolving interpretation, implementation, and technical questions. But the lack of reliance on the body or any mechanism to maintain and evolve the treaty proved problematic in light of the changing nature of military technologies and increasing innovation, to include with regard to shorter-range and intermediate-range missiles.

Implementation

The INF Treaty's implementation was also relatively unique. While early implementation was successful and both parties complied in its early

years with the standards and timelines of the treaty's Elimination Protocol, US efforts to address Russia's violation of the treaty proved problematic. Despite having concerns over Russian missile development since the mid-2000s, the United States did not raise these concerns with Russian counterparts until the spring of 2013. It then made Russia's violation a matter of public record in its annual report on arms control and nonproliferation compliance to Congress in 2014.[75] To resolve the dispute over alleged violations, the United States adopted a strategy of continuing diplomatic overtures consisting largely of bilateral consultations with the Russians at various levels for the next two and a half years. The United States only convened the SVC in November of 2016, which ultimately produced little in the way of results or resolution.

Just prior to a second convening of the SVC in November of 2017, the Trump administration presented its plan of action to the Russians when the US ambassador to Russia, Jon Huntsman, Jr., met with the Russian deputy foreign minister, Sergei Ryabkov. The US government's "Integrated Strategy" outlined the diplomatic, military, and economic steps the United States would take to coerce Russia back into compliance with the INF Treaty, including a review of "military concepts and options" should the Russians not return to compliance.[76] The United States continued to "discuss its concerns" with Russia and indicate Russian noncompliance in its annual compliance reports through 2018.

The arms control literature on treaty violations, disputes, and resolutions offers some insight into best practices in this area, particularly with respect to the use of a treaty's dispute resolution body. Scholars Antonia and Abram Chayes indicate that "the consultative body specified in an arms control agreement should be the forum of first choice for raising compliance issues," but that "if after a reasonable period" the dispute is not satisfactorily resolved and the violation appears "clear and deliberate," stronger actions, including a formal charge of violation, may be warranted.[77] In the case of the INF Treaty, however, the SVC was clearly not the United States' first choice for addressing Russia's violation of the accord, as it waited a great deal of time before convening the body, preferring a strategy of trying to resolve the dispute outside the official margins of the treaty instead. US diplomatic declarations and actions in the interim, however, which took place outside of the treaty, may have led Moscow to conclude that the United States preferred to resolve the dispute quietly, was reluctant to impose consequences, and was uncertain of how much it valued the accord. Edwin Smith, an expert in treaty law, has argued that, on their own, "authoritative formal determinations of non-compliance contribute

little to the arms control treaty relationship."[78] The United States resorted to such determinations and confrontations over a protracted period without taking any "clear and deliberate" action to either bolster the fading treaty or impose real costs on Russia for its continuing, willful violation of the treaty.

As a result, it was not until several years after the United States first detected the Russian violation of the treaty that it took "stronger action" in the form of the Integrated Strategy. The United States pressured Russia with this policy for approximately a year before setting the wheels in motion for the ultimate consequences of suspension and withdrawal.

The United States also did not make a significant effort to coordinate with the other non-Russian Federation treaty members in addressing Russia's INF violation, nor did it formally consult with its NATO allies on this matter until January 2014. Harald Müller, former director of the Peace Research Institute of Frankfurt, has argued that in arms control implementation "leadership must be transparent—the fellow treaty parties must know what leaders are doing to help restore compliance . . . and coordinate with other community partners."[79] In this case, US consultation with NATO allies occurred months after initial US diplomatic engagement directly with Russia. Further, some allies were later surprised by the Trump administration's statement in October 2018 that it was prepared to exit the treaty. These actions set in motion a flurry of diplomatic activity yielding a NATO statement at the end of the month that "no arms-control arrangement can be effective if it is only respected by one side."[80] This sequence of events appears to belie advance coordination. A more cohesive alliance response may not have saved the INF Treaty, but better coordination on future treaty violations may play a role in impacting Russia's cost-benefit calculus for its compliance with treaties and agreements.

Adaptive Change for Enduring Arms Control

Although not yet dead, the INF Treaty offers lessons for future treaty negotiators. First, the treaty's construction as a pact of unlimited duration coupled with a relatively limited and ad hoc mechanism—in the SVC—for addressing later questions of effectiveness failed to provide either a channel or a means to allow both parties to regularly review and discuss adapting the treaty when necessary. The Nuclear Nonproliferation Treaty, for example, has review conferences every five years to discuss and debate its implementation and future. The pace of technological and geopolitical change in the twenty-first century suggests that any agreement on limit-

ing types or numbers of armaments would likely benefit from a regular review process codified in the original text. Doing so would allow participants to determine whether the treaty's arms limitations are still in their best interests and, if not, discuss whether the treaty can be expanded or contracted to render a compact that can continue to provide transparency and stability benefitting the security of all parties.

Second, the treaty should not have placed a time limit on its verification regime, particularly given its indefinite duration. National technical means, such as overhead satellites, offer abundant information allowing the United States to assess the compliance of other parties with treaties and agreements. However, there is no full substitute for the on-site inspection and portal monitoring teams that can directly observe treaty-limited equipment, or its absence, at designated bases, manufacturing plants, and other locations.[81] It would be reasonable to scope the number and tempo of inspections, and perhaps other elements of a verification regime, with the life cycle of a treaty—for example, having more inspections in its initial implementation phase. However, ending these types of verification activities after a treaty has reached its initial objectives limits a vital means of maintaining trust and confidence in continuing compliance with the accord. Problems can ensue later if either side begins to question the continuing fidelity of other participating states with the terms of the pact. For any treaty of lengthy or indefinite duration, a verification regime should be designed to satisfy President Reagan's arms control maxim of "trust, but verify" across the entire life of the accord.

Third, the experience of the INF Treaty may indicate that accords having a significant impact on alliance assurance and extended deterrence matters may benefit from a review and dialogue process—separate from, but parallel to, the treaty itself —whereby the United States and its allies can regularly discuss the treaty and its relationship to the security of alliance members. Within such a process, the United States should be clear whenever it views any particular treaty as no longer in the best interests of its national security; the gatherings would be for discussion and consultation, and the forum would not represent a separate decision-making body. Its value in terms of communication and coordination on treaty matters, however, would be beneficial to the United States and its allies. Putting forward a seamless US-allied front on all actions regarding treaties is particularly important given Russia's long-standing objective of using multiple means to try and create division between the United States and its allies.

Fourth, the potential end of the INF Treaty underscores the challenges facing future rounds of US-Russia arms control negotiations and proposals

for future multilateral talks that could include additional nuclear states. Access to advanced military technologies is not restricted to major powers, and competition between major powers is not restricted in terms of types of weapons or strategic domains. Russia and other actors have integrated their nuclear forces with other means of warfare due to their assessment that nuclear weapons will remain critical to regional and international security for the foreseeable future. Given these challenges, is it possible for the United States and Russia to have future nuclear arms control agreements solely addressing their strategic nuclear arsenals?

It remains in the best interest of Washington and Moscow to continue to engage in negotiations aimed at reducing nuclear risk, particularly if treaties such as the INF come to an end. Indeed, these types of talks are even more critical as Cold War agreements and understandings continue to erode or expire. Future agreements, however, must be designed with greater flexibility in mind. The great success of the INF Treaty should be remembered and celebrated. If it passes into history, perhaps the INF can teach us that the future of arms control will need to prove as nimble and adaptable as the weaponry it seeks to limit. SSQ

Notes

1. The full formal title of the treaty is the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Elimination of Their Intermediate-Range and Shorter-Range Missiles. The INF Treaty does not ban any short-range missile (SRBM) systems with a range of 300–500 km. It defines and bans "shorter-range" missiles as missiles with a range of 500–1,000 km (art. II, par. 5) and "intermediate-range" missiles as missiles with a range of 1,000–5,500 km (art. II, par. 6). The INF Treaty, entered into force 1 June 1988, https://www.state.gov/t/avc/trty/102360.htm. This article will use these terms and range definitions throughout. The treaty differs from a number of US government publications that do not generally include a "shorter-range" missile category.

2. Department of State, Office of the Spokesperson, "Joint U.S.-Russian Statement on the Treaty on the Elimination of Intermediate-Range and Shorter-Range Missiles at the 62nd Session of the UN General Assembly," 25 October 2007; and Rose Gottemoeller, "Looking Back: The Intermediate-range Nuclear Forces Treaty, Arms Control Today," Arms Control Association, June 2007, https://www.armscontrol.org/.

3. Office of the Director of National Intelligence, "Director of National Intelligence Daniel Coats on Russia's INF Treaty Violation," press statement, 30 November 2018, https://www.dni.gov/.

4. Department of State, "U.S. Intent to Withdraw from the INF Treaty," press statement, Secretary of State Michael Pompeo, 2 February 2019, https://www.state.gov/secretary/remarks/2019/02/288722.htm.

5. The treaty led to the verifiable dismantlement of 1,846 Soviet short and intermediate-range missiles (654 SS-20s, 718 SS-12s, 149 SS-4s, 6 SS-5s, 239 SS-23s, 80 SSC X-4s) and 846 US short and intermediate-range missiles (169 Pershing 1As, 234 Pershing IIs, 443 BGM-109s). Joseph P. Harahan, *On-Site Inspections under the INF Treaty* (Washington, DC: US Government Printing Office, 1993), 1–3, 8–9, https://www.dtra.mil/Portals/61/Documents/History/On-Site%20Inspections%20INF%20Treaty-opt.pdf.

6. Central Intelligence Agency, "The Changing Shape of the Soviet Peripheral Ballistic Missile Force," 9–13, June 1970, CIA Reading Room, https://www.cia.gov/.

7. Jeffrey Record, *NATO's Theater Nuclear Force Modernization Program: The Real Issues* (Washington, DC: Institute for Foreign Policy Analysis, 1981): 38–39; and Gerhard Wettig, "The Last Soviet Offensive in the Cold War: Emergence and Development of the Campaign against Euromissiles, 1979–1983," *Cold War History* 9, no. 1 (February 2009): 82–83.

8. Andrew J. Pierre, "The SALT Agreement and Europe," *The World Today* 28, no. 7 (July 1972): 288. Authors note: "Strategic" referred to long-range delivery systems, such as intercontinental ballistic missiles (ICBM), submarine-launched ballistic missiles (SLBM) on nuclear submarines (SSBN), and long-range bombers capable of launching strikes deep into the adversary's homeland. Other delivery systems were considered "theater," "tactical," or "nonstrategic," inasmuch as both sides readily understood the strategic implications of where these systems were located and how they were postured.

9. Department of State, SALT II Treaty, signed at Vienna 18 June 1979, https://www.state.gov/t/isn/5195.htm; and Edward Walsh, "Carter and Brezhnev Sign SALT II," *Washington Post*, 19 June 1979, A1, http://cc.bingj.com/.

10. Edward Rhodes, "Nuclear Weapons and Credibility: Deterrence Theory beyond Rationality," *Review of International Studies* 14, no. 1 (January 1988): 45, https://www.jstor.org/.

11. Helmut Schmidt, "The 1977 Alastair Buchan Memorial Lecture," *Survival* 20, no. 1 (1978): 2–10.

12. Fred Kaplan, "Warring over New Missiles for NATO," *New York Times*, 9 December 1979, https://www.nytimes.com/.

13. Leopolodo Nuti, "The Origins of the 1979 Dual-Track Decision: A Survey," in Leopolodo Nuti, ed., *The Crisis of Détente in Europe: From Helsinki to Gorbachev, 1975–1985* (Abingdon, Oxford: Routledge, 2009): 64.

14. Rose Gottemoeller, *Looking Back: The Intermediate-range Nuclear Forces Treaty, Arms Control Today,* June 2007, https://www.armscontrol.org/act/2007_06/LookingBack.

15. The Carter administration issued Presidential Review Memorandum (PRM)-38 ("Long-Range Theater Nuclear Capabilities and Arms Control"), ordering a high-level study of the "dual track" approach that later informed the United States' subsequent support for this approach. The 22 June 1978 PRM directed the Special Coordination Committee to assess the "political and military aspects of . . . [1] possible increased long-range theater nuclear force capabilities in Europe for strategic strikes on the Soviet Union [and] [2] possible inclusion in future arms control negotiations of long-range theater nuclear systems." Zbiegnew Brzezenski, National Security Council, to Vice President, Secretary of State, and Secretary of Defense, Presidential Review Memorandum/NSC 38, 22 June 1978, https://www.jimmycarterlibrary.gov/assets/documents/memorandums/prm38.pdf.

16. NATO Headquarters, Special Meeting of Foreign and Defense Ministers, Brussels, chairman: Mr. J. Luns, 12 December 1979, NATO Ministerial Communiqué, https://www.nato.int/.

17. Henry H. Gaffney, "Euromissiles as the Ultimate Evolution of Theater Nuclear Forces in Europe," *Journal of Cold War Studies* 16, no. 1 (Winter 2014): 186.

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