Foreign Policy
at BROOKINGS

MISSILE DEFENSE IN EUROPE:

Cooperation or Contention?

Steven Pifer

BROOKINGS
Arms Control Series
Paper 8 • May 2012

Acknowledgments

I would like to express my deep gratitude to John Beyrle, Linton Brooks, Michael Elleman, Michael O'Hanlon and Greg Thielmann, as well as to officials in the U.S. government, for taking the time to review a draft of this paper and for their very useful reactions and comments. Of course, the contents, conclusions and recommendations are my own.

I appreciate Gail Chalef's assistance in the paper's editing and production. Finally, I am very grateful to the Ploughshares Fund for its generous support for this paper and for other activities of the Brookings Arms Control Initiative.

Table of Contents

1. Introduction and Executive Summary

Missile defense has been an issue on the agenda between Washington and Moscow since the 1960s. Although the 1972 Anti-Ballistic Missile Treaty appeared to resolve the question, it kept coming back—in the form of U.S. suspicions about the large, phased array Soviet radar at Krasnoyarsk, Soviet concern about the Strategic Defense Initiative, National Missile Defense programs, U.S. withdrawal from the Anti-Ballistic Missile Treaty and plans for deploying missile defenses in Europe.

In 2012, the missile defense issue ranks high on the U.S.-Russia and NATO-Russia agendas. Policymakers in Washington, Moscow and NATO capitals face a challenge: can they manage the question in a cooperative manner, perhaps by developing a NATO-Russia missile defense of Europe, or will this be a contentious issue that undermines arms control and broader relations?

After a review of the history of missile defense, this paper describes the Obama administration's "European Phased Adaptive Approach" (EPAA) to missile defense in Europe. The EPAA is based on the Aegis SPY-1 radar and Standard SM-3 missile interceptor, which is to be upgraded over the next decade to defend NATO Europe, and later to augment defense of the U.S. homeland, against prospective longer-range ballistic missiles from Iran (though NATO as a matter of policy does not publicly cite Iran). NATO has endorsed this approach, and the first phase began in 2011, with deployment of U.S. Navy warships armed with SM-3 interceptors in the Mediterranean and a supporting radar in Turkey. Later phases envisage SM-3 interceptors plus SPY-1 radars deployed on land in Romania and Poland.

Initially, the Russians seemed to see the EPAA as less of a threat than the Bush administration plan that it replaced. The Russians agreed at the end of 2010 to explore a cooperative missile defense arrangement with NATO. In 2011, however, Russian officials attached priority to securing from Washington a "legal guarantee" that U.S. missile defenses would not be directed against Russian strategic ballistic missiles, accompanied by a series of constraints.

The Obama administration has offered a political assurance on this but could not agree to a legal guarantee. Republican support for missile defense and opposition to any treaty limits on it would mean that a treaty could not obtain the two-thirds majority necessary for Senate ratification. Moscow nevertheless has held to its insistence. The mix of motives that underlies the Russian approach to missile defense and possible cooperation with NATO is not entirely clear but likely includes: concern that later phases of the EPAA or subsequent developments will threaten Russian strategic ballistic missiles; Ministry of Defense reluctance in principle to engage in a cooperative effort; opposition to U.S. military infrastructure on the territory of countries that joined NATO in or after 1999; and a desire to drive wedges within NATO. Finally, Moscow may be in a holding pattern on missile defense, as it is on nuclear arms control issues, until it sees who wins the November U.S. presidential election.

Should the sides find a way around the legal guarantee obstacle, there appears to be a rich menu of ideas as to how a cooperative NATO-Russia missile defense arrangement might be structured. In 2011, U.S. and Russian officials reportedly found

convergence on ideas such as transparency; joint NATO-Russian missile defense exercises; a jointly-manned "data fusion center" that would share early warning data and develop a "common operational picture;" and a "planning and operations center" that would, among other things, implement transparency measures, exchange updated threat assessments, and discuss possible attack scenarios. Several U.S.-Russia Track II dialogues over the past two years have developed complementary ideas for NATO-Russia missile defense cooperation.

The Russian proposal for a legal guarantee is accompanied by a proposal for "objective criteria," which translates to limits on numbers, velocities and locations of missile defense interceptors—a treaty covering missile defense. Short of a treaty, however, there are ways to reassure Moscow about the capabilities of U.S. missile defenses and the inherent limits on those capabilities. For example, as the head of the U.S. Missile Defense Agency has suggested, the Russians could observe SM-3 interceptor tests to confirm that the velocity and range of the missile would not allow it to engage Russian strategic missiles. The U.S. government might also offer an annual declaration regarding the current and planned numbers of key elements of the U.S. missile defense system—interceptor missiles, silos and land-based launchers, associated radars and missile-defense capable ships—and commit to provide advance notice of changes in the planned numbers. This would allow Moscow to gauge whether the sum of U.S. capabilities seriously challenged its strategic deterrent.

In different political circumstances, given current U.S. plans, it would appear that a ten-year agreement limiting each side to no more than 100-125 interceptors capable of engaging strategic ballistic missiles would (1) assure Moscow that its strategic ballistic missile force was not threatened, and (2) permit the United States to do everything that it wants to do over the next decade to defend against the Iranian and North Korean ballistic missile threats. The administration, however, is not exploring such a treaty, as it understands that any such agreement would have no prospect of Senate ratification.

For the time being, missile defense falls into the category of difficult issues in U.S.-Russia relations. Achieving a NATO-Russia agreement on missile defense cooperation appears all but impossible in 2012. The U.S. and NATO objective should be to keep the door open for a NATO-Russia agreement in 2013. Then, the United States and NATO could offer a package to encourage Russia to join in a cooperative missile defense. Such a package could include some or all of the following measures:

- A U.S. and NATO political commitment not to direct their missile defenses against Russian strategic ballistic missiles.

- Maximum transparency regarding planned U.S. missile defenses. This should include an offer of an annual notification laying out the numbers of key missile defense elements currently deployed and planned for deployment each year over the next decade. This should be accompanied by a commitment to provide the Russians notice in advance should there be any changes in those planned deployment numbers. Ideally, this would apply on a reciprocal basis.

- Technical briefings as to why the Defense Department concludes that U.S. missile defenses will not threaten Russian strategic ballistic missiles.

- Reiteration of the offer to allow Russian experts, using their own sensors, to observe SM-3 interceptor tests.

- Indicating that a cooperative NATO-Russia missile defense arrangement could be of a provisional, time-limited nature, with NATO acknowledging at the outset that (1) Moscow has strong concerns regarding U.S./NATO missile defense capabilities and (2) Russia's decision to agree to a provisional cooperative arrangement does not preclude that Moscow may decide not to make the arrangement permanent if it

believes that U.S./NATO missile defense capabilities will threaten its strategic forces.

- Indicating that, as long as the ability of NATO's missile defense to protect all Alliance members is not degraded, NATO is prepared to listen to and accommodate reasonable Russian suggestions for a cooperative arrangement.

- Indicating that the "adaptive" part of the EPAA includes a possibility that the United States might slow development of and/or in consultation with NATO choose not to deploy the SM-3 Block IIB interceptor if it were clear that Iran were not making significant progress toward achieving a longer-range missile capability.

- Establishing regular U.S.-Russia (or NATO-Russia) ballistic missile threat assessment conferences, focusing on North Korea and Iran, to close the gap in the sides' estimates.

In 2013, if Moscow is prepared to move forward, these recommendations would provide a basis for engaging the Russians and for moving to agree on and implement ideas for a cooperative missile defense arrangement for Europe. Some of these recommendations would prove controversial in Washington. But they would not undermine current U.S. plans for missile defense to protect Europe and the U.S. homeland. They would only cause a change in those plans if it became clear that some threats, such as an Iranian intercontinental ballistic missile, were not emerging.

The United States and NATO should seek, without degrading their ability to defend against limited ballistic missile attack, to make it as easy as possible for Moscow to agree to a cooperative missile defense arrangement. Ultimately, the Russians will have to decide how to respond. A Russian readiness to accept a political commitment that U.S. missile defenses were not directed against their strategic ballistic missiles rather than a legal guarantee would open dramatic potential for cooperation. The reported convergence in the sides' thinking could presage a relatively rapid realization of a practical cooperative arrangement. That would be in the U.S. interest, making missile defense an asset rather than a liability on the U.S.-Russia and NATO-Russia agendas, providing for a stronger missile defense of Europe, and perhaps proving a game-changer in broader NATO and Russian attitudes toward each other.

A note on scope: This paper focuses on Europe, currently the geographic center of the discussion on missile defense. While not addressed here, missile defense is also an issue in the Middle East and in Asia, as demonstrated by the deployment of land- and sea-based missile defense assets in anticipation of the April 13, 2012 North Korean rocket launch. China also figures in the broader discussion. Having a smaller strategic missile force than Russia, Beijing will closely follow U.S. efforts to defend America against ballistic missile attack. And one reason why the U.S. Navy is interested in the Standard SM-3 interceptor is that it could enhance the Navy's ability to defend aircraft carriers against Chinese ballistic missile attacks designed to deny access to certain ocean areas.

2. A Brief History of Missile Defense

Galosh, Spartan and Sprint

Missile defense is by no means a new issue. Almost as soon as the United States and Soviet Union began developing and deploying intercontinental ballistic missiles (ICBMs) and submarine-launched ballistic missiles (SLBMs) in the late 1950s and early 1960s, they began work on systems to defend against those missiles. The Soviets by the mid-1960s had begun developing an anti-ballistic missile (ABM) system to defend Moscow, based on the Galosh interceptor missile. The Galosh was intended to engage and destroy an incoming ballistic missile warhead outside of the atmosphere, using a nuclear warhead. The Moscow ABM system became operational in 1971.

Suspicions about Soviet ABM intentions played a significant role in the U.S. calculation of its strategic offensive needs in the 1960s. The United States in parallel pursued its own ABM efforts. The Johnson administration proposed the Sentinel program to deploy nuclear-armed ABM interceptor missiles at locations around the United States to defend cities against a deliberate Chinese attack or unauthorized Soviet launch. The Nixon administration replaced that plan with the Safeguard system to protect Minuteman ICBM silos against possible attack in order to preserve a robust retaliatory capability. The Safeguard system utilized two types of interceptor missiles. The Spartan was designed to carry a large nuclear warhead—at five megatons, it was bigger than most warheads in the U.S. strategic offensive stockpile—and intercept incoming reentry vehicles (warheads) outside of the atmosphere. The Sprint, a very high velocity missile with a much smaller nuclear warhead, provided a second echelon of defense and was designed to engage incoming warheads once they had reentered the atmosphere.

The early ABM systems on both sides had to be guided by ground-based radars. The challenges of tracking and intercepting relatively small warheads traveling at high velocities—ICBM warheads travel at about seven kilometers per second (well over 15,000 miles per hour)—are formidable. Neither side had a reliable technical capability to hit an incoming warhead directly or even get close enough to destroy it with a conventional warhead. ABM interceptors thus were armed with nuclear warheads.

By the mid-1960s, both the United States and the Soviet Union had deployed sufficient strategic offensive nuclear forces—ICBMs, SLBMs and nuclear-capable heavy bombers—so that a situation of mutual assured destruction (MAD) prevailed. If either side considered striking first, it would have to calculate that it would still suffer huge damage as a result of the other's retaliatory strike. U.S. officials began to consider the offense-defense relationship, specifically, the consequences of widespread anti-ballistic missile defenses for strategic stability. Strategic stability was generally seen to have two components: arms race stability and crisis stability.

First, U.S. officials worried that ABM systems could undermine arms race stability, which envisaged a situation in which neither side had incentives to expand its nuclear forces. If the Soviet Union began deploying a widespread ABM system, the United States might need to increase its ICBMs and SLBMs

in order to be confident that it could overwhelm the Soviet defenses. The action-reaction phenomenon thus could result in ever expanding strategic forces on both sides. This would have made a strategic arms limitation arrangement, which Washington had just begun to think about, difficult if not impossible to achieve.

Second, and more importantly, U.S. officials worried about the impact of ABM systems on crisis stability. If both the United States and Soviet Union had ABM systems in addition to large strategic offensive forces, would one side in a severe crisis be more tempted to launch a first strike? The side might calculate that, if it struck first and destroyed a substantial portion of the other's strategic offensive forces, its ABM systems could cope with the weakened retaliatory strike—or at least leave it in a substantially better position than if it instead absorbed a first strike.

These kinds of stability considerations led U.S. officials to favor limiting ABM systems as well as limiting strategic offensive forces by agreement. In 1969, U.S. and Soviet negotiators began the Strategic Arms Limitation Treaty (SALT) negotiations, which addressed both.

The ABM Treaty

Following seven negotiating rounds, President Richard Nixon and General Secretary Leonid Brezhnev in June 1972 signed the Interim Offensive Arms Agreement and the ABM Treaty. The Interim Offensive Arms Agreement capped the numbers of U.S. and Soviet ICBM and SLBM launchers at the levels then existing or under construction.

The ABM Treaty prohibited the United States and Soviet Union from deploying a nationwide defense against strategic ballistic missiles and limited each side to two deployment sites, one near the national capital and one at an ICBM field. No more than 100 ABM interceptor launchers could be located at each site. The treaty restricted radars, permitting a limited number of battle management radars at each ABM deployment site but otherwise requiring that large radars capable of tracking ICBM and SLBM warheads be located on the country's periphery and oriented outwards. So located, the radars could provide early warning of missile attack but could not direct ABM interceptors against incoming warheads. The treaty also prohibited developing, testing or deploying ABM systems that were "sea-based, air-based, space-based or mobile land-based."[1]

A key reason—above and beyond strategic stability arguments—that motivated the sides to conclude the ABM Treaty was cost. At the time, building additional strategic offensive systems appeared to be as cheap as or cheaper than building ABM interceptors. This was particularly true as the sides developed ICBMs and SLBMs capable of carrying multiple independently targetable reentry vehicles (MIRVs); some missiles ultimately were deployed with as many as 10-14 warheads. It was apparent to officials in both Washington and Moscow that, with the technology of the time, offense would "win" the race with defense.

Both sides ratified the ABM Treaty in summer 1972, the U.S. Senate by a vote of 88-2, and the treaty entered into force that October. In 1974, President Gerald Ford and Brezhnev signed a protocol to the ABM Treaty that restricted each side to 100 ABM interceptor launchers at only one site. The Soviets chose to maintain their site around Moscow, but Congress in 1975 voted to end funding for the U.S. site at Grand Forks ICBM base in North Dakota, shutting it down just months after it had become operational.

Many analysts agreed with the two governments that the ABM Treaty shaped the offense-defense relationship in a way that enhanced strategic stability. The low number of interceptors permitted by the treaty provided little additional incentive for the sides to increase their ICBM and SLBM forces (although those forces did increase for other reasons, primarily due to the ease of adding MIRVs on missiles). Moreover, the tight treaty limits on ABM systems gave each side assurance that it would be able to retaliate against and inflict heavy damage on the other, which reduced incentives to consider a first strike in a crisis.

The Strategic Defense Initiative

Ronald Reagan took office in 1981 believing that the Soviet Union had gained crucial advantages in the overall strategic nuclear balance. While taking steps to augment U.S. strategic offensive forces, he was distressed to learn that, in the event of a Soviet attack, he could order a retaliatory strike but had no ability to defend the United States against Soviet ballistic missiles. The Reagan administration also worried that the Soviets might be laying the basis for a prohibited territorial defense. The concern focused on construction of a large phased array radar at Krasnoyarsk in central Siberia; in contrast to the requirements of the ABM Treaty, the radar was not located on the periphery of the Soviet Union and oriented outwards.

In March 1983, Reagan announced the Strategic Defense Initiative (SDI), posing the question: "What if free people could live secure in the knowledge that their security did not rest upon the threat of instant U.S. retaliation to deter a Soviet attack, that we could intercept and destroy strategic ballistic missiles before they reached our own soil or that of our allies?"[2] Reagan sought to replace nuclear deterrence and MAD with the ability to defend the United States against a large-scale Soviet ballistic missile attack. Dubbed "Star Wars" by pundits, SDI explored a variety of defense possibilities.

The technologies included ground-based interceptor missiles with "hit-to-kill" capabilities, that is, they would destroy an incoming ballistic missile warhead by directly colliding with it, "hitting a bullet with a bullet." "Smart Rocks," which later evolved into "Brilliant Pebbles," envisaged a constellation of satellites, each carrying dozens of small powered interceptors that could be fired against Soviet missiles in their boost phase. Other technologies included directed-energy weapons, such as an X-ray laser in space that used a nuclear explosion to generate a pulse of X-rays, which could be directed against multiple warheads or against ballistic missiles in their boost phase. Many of these technologies—space-based systems, for example—appeared to be potential violations of the ABM Treaty. Moreover, systems based on "other physical principles," such as lasers, were subject to discussion under terms of the treaty.

SDI devoted particular attention to exploring technologies that could destroy ICBMs and SLBMs during the boost phase, when the missiles' engines were still burning and before the warheads could separate. If they could successfully destroy missiles, U.S. defenses would not have to cope with the smaller and more numerous reentry vehicles (warheads) that would be dispersed by the missiles or differentiate between warheads and decoys. Moreover, while missile engines were still burning, they provided a bright and very visible target, far easier to see and track than a warhead.

Soviet military planners initially went into a near panic over SDI, fearing that a crash U.S. program might negate Moscow's huge investment in ICBMs and SLBMs. Even if SDI did not provide a complete shield, it might prove capable of defeating most of the warheads that the Soviets could launch in a retaliatory strike. The Soviets began investigating countermeasures and launched a major public campaign to undermine support for SDI in the West. By 1986 and early 1987, however, Soviet scientists had concluded that the U.S. program faced large technological challenges and would not pose a serious threat to their strategic missile force for many years or decades. This helped enable General Secretary Mikhail Gorbachev to consider significant reductions in strategic and intermediate-range nuclear forces.

When Reagan met Gorbachev in Reykjavik in October 1986, the two came close to agreeing on a plan to eliminate all of their nuclear weapons. But Gorbachev insisted that the sides agree to limit SDI research, development and testing to the laboratory for a period of ten years, and Reagan would not agree. Reykjavik nevertheless laid the foundations for the 1987 treaty banning U.S. and Soviet intermediate-range missiles and the 1991 Strategic Arms Reduction Treaty (START I).

By the end of the 1980s, the United States was finding that defensive technologies were far more difficult

to develop than anticipated, and the costs went well beyond what had been hoped. Offense still appeared to be readily capable of winning the race with defense.

The George H. W. Bush administration scaled back plans for missile defense, embracing a more limited system called GPALS (Global Protection against Limited Strikes). That envisaged a combination of ground- and space-based interceptors that would provide protection against a *limited* number of offensive ballistic missiles. (Protection of the United States against a limited ballistic missile attack remains U.S. policy to the present.) While not nearly as ambitious as SDI, GPALS still would have violated the limits of the ABM Treaty, both in the number of interceptors and the fact that up to hundreds of them would have been space-based. The Clinton administration decided to shelve the plan after it assumed office.

A second factor affecting the Bush administration's approach was the problem that Iraqi Scud missiles had posed for U.S. and coalition forces and for Israel during the 1991 Gulf War. U.S. missile defense efforts shifted toward deployable theater missile defense systems capable of dealing with shorter-range missiles that could threaten U.S. forces on the battlefield. By the end of the 1990s, the Pentagon was preparing to deploy the Patriot Advanced Capability-3 (PAC-3) system, with capabilities against tactical ballistic missiles; had begun testing the Terminal High-Altitude Area Defense (THAAD) system, with capabilities against theater ballistic missiles; and was developing the Standard SM-2 interceptor for U.S. Navy ships to provide terminal defense against shorter-range missiles. These missiles offered some prospect of intercepting shorter-range ballistic missiles, which travel at considerably slower velocities than ICBMs and SLBMs and thus are easier to engage.

National Missile Defense

As the capabilities of defenses to deal with ballistic missiles increased in the 1990s, the Russians expressed concern that they might become capable of engaging faster targets, including ICBM and SLBM warheads. U.S.-Russian discussions ensued in the Standing Consultative Commission, a body established by the ABM Treaty to consider issues related to the treaty's operation. Those discussions in September 1997 produced several agreed statements that collectively became known as the ABM demarcation agreement.

The statements provided that tactical missile defense interceptors would not be considered ABM systems—and thus would not be subject to the constraints of the ABM Treaty—provided that their velocity did not exceed three kilometers per second, that the velocity of the target missile against which the interceptors were tested did not exceed five kilometers per second, and that the range of the target missile did not exceed 3,500 kilometers. The logic of the demarcation agreement was that any missile interceptor with a velocity of less than three kilometers per second and tested against a target with a velocity of less than five kilometers per second—for example, the THAAD interceptor—would lack the capability to engage ICBM or SLBM warheads, which travel at velocities well above five kilometers per second.

In the meantime, Congress adopted the National Missile Defense Act of 1999, which declared: "It is the policy of the United States to deploy as soon as is technologically possible an effective National Missile Defense system capable of defending against limited ballistic missile attack (whether accidental, unauthorized or deliberate)."[3] The legislation was motivated in part by the 1998 report of the Commission to Assess the Ballistic Missile Threat to the United States, led by Donald Rumsfeld. The report challenged the intelligence community for underestimating the growing ballistic missile threat and asserted that Iran and North Korea could develop an ICBM capable of striking the United States within five years of a decision to do so.

The Clinton administration began looking at possible national missile defense (NMD) architectures, including configurations involving 100-250 ground-based interceptors—not enough to stop a major Russian missile strike. The plan envisaged deploying

interceptors in Alaska and possibly in North Dakota. The Alaska site would have been inconsistent with the terms of the ABM Treaty, as would have been the number of interceptors if they exceeded 100, so the administration decided to consult with Moscow on possible changes to the agreement. U.S. officials explored with the Russians the possibility of amending the treaty in late 1999 and the first half of 2000, but the Russians showed no interest, in part because of the looming U.S. presidential election.[4] In the end, the Clinton administration deferred on the issue rather than choosing to deploy an NMD system that would have contravened the ABM Treaty. That decision was made easier by the failure of a key missile defense test in summer 2000, which raised questions about whether the system was ready for deployment.

ABM Treaty Withdrawal and Ground-based Interceptors

The George W. Bush administration came to office intent on advancing missile defense. In December 2001, following pro forma consultations with the Russian government, the administration gave the treaty-required six months notice of its intent to withdraw from the ABM Treaty. Russian President Vladimir Putin's calm reaction likely defused what might otherwise have been a controversial issue with some in Congress and certain NATO allies.

With conclusion in May 2002 of the Strategic Offensive Reductions Treaty, which limited each side to 1,700-2,200 operationally deployed strategic warheads, Bush administration officials believed that they had severed the offense-defense link established by the SALT I agreements in 1972. Missile defenses were no longer constrained by treaty once the United States formally withdrew from the ABM Treaty in June 2002, while U.S. and Russian strategic offensive forces were treaty-limited (though the Strategic Offensive Reductions Treaty was a thin piece of work, lacking definitions, counting rules or verification measures).

Citing concerns about the potential of rogue states such as North Korea and Iran to develop long-range missiles, the Bush administration pushed the Pentagon to accelerate deployment of some missile defense capability to protect the United States. In 2004, the Pentagon began deploying the ground-based interceptor (GBI), a three-stage missile designed to intercept warheads outside the atmosphere during the mid-course phase of their flight. Deployed before the testing program had been completed, the GBIs are attributed with some capability to engage and intercept rudimentary ICBM warheads. They employ a hit-to-kill technology: the interceptor's kinetic kill vehicle is given initial guidance toward the incoming warhead's path and, as it closes, opens its infrared seeker. The seeker "sees" the warhead, which will appear hot against the coldness of space, and guides the kill vehicle to collide with the warhead. (One critique of the GBI's seeker—and of the seeker on the Standard SM-3 interceptor discussed in the next section—is that it cannot discriminate between a warhead and a decoy such as a balloon, which would, in the vacuum of space, travel at the same velocity as a warhead and appear hot to the seeker.)

By November 2005, nine GBIs had been deployed at Ft Greeley, Alaska and at Vandenberg Air Force Base, California. The United States presently deploys 26 GBIs at Ft Greely and four at Vandenberg, and intends to complete construction of 14 additional silos to house GBIs at Ft Greely.

The Alaska and California sites were well positioned to defend against first-generation ICBMs from North Korea and offered a capability to defend most of the United States against ICBMs from Iran. The Bush administration sought a third site for GBIs in Europe that would provide additional capability against an Iranian ICBM. In early 2007, U.S. officials began negotiating with Warsaw on the deployment in Poland of ten two-stage variants of the GBIs based in Alaska and California. U.S. officials also negotiated with Prague on positioning an associated X-band tracking and discrimination radar in the Czech Republic. The following year, U.S. officials succeeded in gaining a measure of NATO endorsement at the April 2008 summit. The NATO leaders' communiqué read: "We therefore recognize the substantial contribution to the protection of Allies

from long-range ballistic missiles to be provided by the planned deployment of European-based United States missile defense assets. We are exploring ways to link this capability with current NATO missile defense efforts…"[5]

The Russian government almost immediately expressed concern about the planned location of the GBIs and radar. Russian officials asserted that the GBIs posed a potential threat to their ICBM force. Moscow argued that Iran was many years away from building an ICBM that could reach the United States and that therefore the GBIs in Poland could only be intended against Russia. Although the Bush administration noted that it planned just ten GBIs in Poland, Russian officials contended that that number could increase. The radar planned for the Czech Republic, moreover, had a 360 degree field-of-view and, as Pentagon officials later acknowledged, could track targets in space over Russian territory to the Ural Mountains.

In spring 2007, Putin proposed a cooperative U.S.-Russian missile defense system and offered to make available data from a Russian early warning radar at Armavir in southern Russia and a second radar operated by the Russians in Gabala, Azerbaijan. Both of these radars' field-of-view looked south, providing coverage of Iran. U.S. officials welcomed the offer, which Bush and Putin discussed at a July 2007 meeting in Kennebunkport. Although U.S. and Russian officials continued to discuss the issue for the following year, they failed to find agreement. Washington wanted to add the Russian radars to the U.S. plan. The Russians, on the other hand, wanted their offer to substitute for elements of the proposed U.S. missile defense system and suggested that U.S. interceptors be deployed on ships in the Mediterranean or in Turkey or Iraq instead of in Poland. By the end of the Bush administration's second term, Moscow continued to object vociferously to the third site plan, and missile defense had become one of the most contentious issues on a troubled bilateral agenda.[6]

Not to be lost in the discussion of missile defense is the fact that Russia continues to maintain an ABM system around Moscow, referred to as the A-135. The system originally included the Gorgon and Gazelle ABM interceptor missiles armed with nuclear warheads. Gorgon missiles may have been removed from their silos, leaving 68 deployed Gazelle interceptors, which are now believed to be armed with conventional high explosive warheads.

3. The European Phased Adaptive Approach

The U.S. Plan

Barack Obama took office in January 2009. One of his key foreign policy goals was to "reset" U.S.-Russia relations, which in the aftermath of the August 2008 conflict between Russia and Georgia had fallen to their lowest point since the Soviet Union's collapse in 1991. President Obama met with Russian President Dmitry Medvedev in April 2009. Among other things, the joint statements coming from that meeting acknowledged the offense-defense relationship and announced early negotiations for a new strategic arms reduction treaty to replace START I, which was due to expire in December 2009.

In September 2009, the Obama administration announced a significant reconfiguration of U.S. missile defense plans for Europe. The White House attributed the change in large part to a revised assessment of Iranian ballistic missile capabilities:

> "The intelligence community now assesses that the threat from Iran's short- and medium-range ballistic missiles is developing more rapidly than previously projected, while the threat of potential Iranian intercontinental ballistic missile (ICBM) capabilities has been slower to develop than previously estimated. In the near-term, the greatest threats from Iran will be to U.S. Allies and partners, as well as to U.S. deployed personnel—military and civilian—and their accompanying families in the Middle East and in Europe."[7]

The Iranians have a large number of short-range ballistic missiles, including Scuds. Their Shabab-3 medium-range missile has an estimated range of 1,000-1,600 kilometers, and the Sejjil-2, which is under development, has a projected range of 2,200 kilometers. The Shabab-3 gives Iran a capability to target Israel and Turkey, while the Sejjil-2 could reach targets in southeastern Europe.

Given this reassessment of the Iranian threat, the administration stated that it intended to replace the Bush administration's third site plan with the "European Phased Adaptive Approach" (EPAA). The EPAA would provide earlier capabilities to protect Europe against Iran's short- and medium-range ballistic missiles and could adapt to deal with longer-range Iranian missiles as the Iranians developed them.[8] (It also no doubt occurred to administration officials that the new plan would appear less threatening to Russia than the previous GBI plan.)

The EPAA is based on the solid-fueled Standard SM-3 interceptor missile currently deployed on board U.S. Navy Aegis-class cruisers and destroyers. (The Aegis system refers to an advanced SPY-1 radar and its associated computer hardware and software, capable of tracking a large number of ballistic missile targets simultaneously, as well as the SM-3 interceptor.) Like the GBI, the SM-3 employs a kinetic kill vehicle guided by an infrared seeker into an incoming reentry vehicle (warhead) during its mid-course phase, though the range of the SM-3 is significantly shorter than that of the GBI (while ranges remain classified, the SM-3's current range is believed to be well below 1,000 kilometers, while the GBI's range

is believed to more than several thousand kilometers).[9] The SM-3 interceptor is guided by tracking information from the SPY-1 radar to a point in space, where it opens its infrared seeker.

As outlined by the administration, the EPAA comprises four phases.[10] Phase 1, beginning in 2011, is based on the deployment of U.S. Navy Aegis warships equipped with the SPY-1 radar and armed with SM-3 Block IA interceptor missiles in the eastern Mediterranean Sea, from where they can provide defense for Turkey and southeastern Europe. The U.S.S. Monterrey conducted the first such patrol in spring 2011. To provide early warning and tracking information, a U.S. AN/TPY-2 X-band radar that can view Iran was deployed to Turkey in late 2011. The SM-3 Block IA interceptors are believed to have a velocity of around three kilometers per second and provide a capability to intercept existing Iranian short- and medium-range ballistic missile warheads.

In October 2011, NATO, the United States and Spain announced that, beginning in 2014, the U.S. Navy would homeport four Aegis-class warships in Rota, Spain. This will allow the Navy to have the same forward-deployed capability with fewer ships than would be the case were they operating out of U.S. ports, requiring lengthy transits across the Atlantic.

Phase 2 is planned for 2015. At that point, the U.S. Navy will be deploying the SM-3 Block IB interceptor missile. The missile, with the same velocity and range as the SM-3 Block IA, will have an improved seeker on its kinetic kill vehicle. At-sea deployments will be augmented by "Aegis Ashore," which will entail the deployment of 24 SM-3 missile interceptors and an SPY-1 radar in Romania. In May 2011, the United States and Romania agreed that the interceptors and radar would be located at Daveselu Air Base in southern Romania.

Phase 3 is scheduled to begin in 2018. This phase will entail the deployment on land and at sea of SM-3 Block IIA interceptor missiles, which will be larger than their predecessors. SM-3 interceptors are designed to fit into U.S. Navy vertical box launchers, which have a diameter of 21 inches. The initial booster rocket for the SM-3 Block IA and Block IBs has a diameter of 21 inches, but the rest of the missile has a diameter of only 13.5 inches. With the Block IIA, the entire SM-3 missile body will have a diameter of 21 inches, allowing greater volume for fuel. That will mean that the SM-3 Block IIA will have a longer range and a higher velocity, estimated at about 4.5 kilometers per second, giving it a capability to engage intermediate-range ballistic missile warheads. Phase 3 envisages the deployment of 24 SM-3 Block IIA interceptors and an SPY-1 radar at a second ground site at Slupsk-Redzikowo, near the Baltic coast in northern Poland, which will extend NATO's missile defense coverage to northern Europe.

Phase 4 is scheduled to begin in 2020. It will entail deployment of the SM-3 Block IIB, which is planned to have an improved kill vehicle and a high performance upper stage. Its velocity reportedly will be 5-5.5 kilometers per second. The SM-3 Block IIB will have an enhanced capability against medium- and intermediate-range ballistic missile warheads, plus some capability against ICBM warheads and for "early intercept," which could allow the possibility of multiple shots at a warhead. The SM-3 Block IIB would likely be deployed in Poland. Still in the design stage and several years from being tested, the SM-3 Block IIB will, in contrast to earlier SM-3 blocks, carry some liquid fuel. That could be an issue for its deployment on board warships, as the U.S. Navy prefers solid-fueled missiles for fire safety reasons.

According to the Department of Defense FY 2012 budget submission, the U.S. Navy plans to increase the number of warships capable of deploying SM-3 interceptors from 23 in 2011 to 43 in FY 2020. The total planned buy of SM-3 interceptors in Blocks IA, IB and IIA out to 2020 is 515 missiles, of which only 29 will be Block IIA. The number of Block IIB interceptors by 2020 has not yet been determined but likely will be a relatively small portion of the total SM-3 program (some suggest less than 50).

Missile Defense and New START

U.S.-Russian negotiations on the New START treaty began in April 2009. Russian negotiators raised the issue of missile defense in those talks. Their U.S. counterparts turned the issue aside, noting that they were prepared to acknowledge the offense-defense interrelationship in the preamble of a new treaty but that missile defense should be discussed in a separate channel. U.S. negotiators did accept a provision in the treaty prohibiting deployment of missile defense interceptors in converted ICBM silos or converted SLBM submarine launch tubes, something the U.S. military said it would not do in any case.

As the sides came to closure on final issues in early 2010, the Russians tried to insert language in New START's withdrawal clause to the effect that, were one side's missile defenses to develop quantitatively or qualitatively, that might be grounds for the other side to invoke its right to withdraw from the treaty. U.S. negotiators refused to accept that proposal, and Obama reportedly told Medvedev that, if the Russians insisted on this point, there would be no treaty. In the end, the Russians relented but, on signature of New START in April 2010, issued a unilateral statement, which said that the treaty:

> "may be effective and viable only in conditions where there is no qualitative or quantitative build-up in the missile defense system capabilities of the United States of America. Consequently, the extraordinary events referred to in Article XIV of the Treaty [the article containing language on withdrawal] also include a build-up in the missile defense capabilities of the United States of America such that it would give rise to a threat to the strategic nuclear potential of the Russian Federation."[11]

The U.S. side issued its own unilateral statement on missile defense, which said that U.S. missile defenses "are not intended to affect the strategic balance with Russia" and would be used to defend against "limited missile launches" and "regional threats." U.S. officials pointed out that Moscow issued a similar statement when signing the START I Treaty in 1991 but continued to abide by that agreement, even after the United States withdrew from the ABM Treaty.

During the New START ratification debate, some Senators expressed concern that the preambular language recognizing the offense-defense relationship and the Russian unilateral statement might somehow restrict U.S. missile defense, if only by creating a situation in which Moscow might attempt to blackmail Washington with a threat to withdraw from New START. Senate Republicans have strongly supported missile defense and have made clear that they would oppose any restrictions on it; with some Republicans, support for missile defense appears to have become an article of faith on par with opposing tax increases.

On December 18, 2010, Obama sent the Senate Republican leader a letter, in which he stated: "The New START Treaty places no limitations on the development or deployment of our missile defense programs" and that "my Administration plans to deploy all four phases of the [European] PAA." The Senate's resolution of ratification nevertheless called on the president to certify that he would go forward with all four phases and stated that it was the understanding of the United States that "the New START Treaty does not impose any limitations on the deployment of missile defenses other than the requirements of paragraph 3 of Article V" [the provision that prohibits putting missile interceptors into converted ICBM or SLBM launchers].

NATO Endorsement and NATO-Russia Discussions

At their Lisbon summit in November 2010, NATO leaders embraced the goal of defending NATO Europe against ballistic missile attack. They stated: "the Alliance will develop a missile defense capability to pursue its core task of collective defense. The aim of a NATO missile defense capability is to provide full coverage and protection for all NATO European populations, territory and forces against the increasing threats posed by the proliferation of ballistic missiles."[12]

While the United States will provide the bulk of the missile defense capability, NATO will collectively fund the command, control and communication system at an estimated cost of $200 million. Other NATO members with missile defense assets may also participate. Germany and the Netherlands operate the Patriot PAC-3 system, and the Spanish and Dutch navies have or are procuring Aegis-class warships compatible with the SM-3 interceptor.

NATO leaders also met with Medvedev in Lisbon. They agreed to pursue the possibility of missile defense cooperation, noting in their joint statement: "we agreed to discuss pursuing missile defense cooperation. We agreed on a joint ballistic missile threat assessment and to continue dialogue in this area. The NRC [NATO-Russia Council] will also resume Theater Missile Defense Cooperation. We have tasked the NRC to develop a comprehensive joint analysis of the future framework for missile defense cooperation."[13]

The Russians suggested a sectoral approach to missile defense cooperation, in which NATO and Russia would divide Europe into two sectors, with each responsible for defending one. This plan was unacceptable to NATO and U.S. officials, because it would have placed some NATO allies in the Russian sector. NATO intended that its missile defense system would provide coverage for all NATO countries.

At present, the primary Russian contribution to a cooperative missile defense system with NATO would be early warning and tracking data from the Russian radar at Armavir and the Russian-operated radar at Gabala. These radars, which view Iran, would likely be able to provide earlier warning and tracking data than the U.S. AN/TPY-2 radar in Turkey, though they could not provide a fire control solution (the AN/TPY-2 is more discriminating and can help "cue" SM-3 interceptors to the point where they could open their infrared seeker to locate and intercept the target warhead). Still, the data would be valuable to the United States and NATO, and General Patrick O'Reilly, head of the Missile Defense Agency, told a Congressional hearing in April that the United States could benefit from access to this data.

The Russians say that their S-400 missile, now being deployed, has capabilities to intercept short- and medium-range ballistic missiles. Russia is also developing the S-500, which is to have greater capabilities for missile defense, including against intermediate-range ballistic missiles. The potential contribution of the S-400 and S-500 to a cooperative missile defense is less clear, and U.S. officials for now appear more interested in Russian radar data.

In 2011, discussions on missile defense cooperation proceeded in two channels: NATO-Russia and U.S.-Russia. Moscow seemed to attach greater priority to the latter, and U.S. and Russian officials engaged in both State Department-Foreign Ministry and Defense Department-Ministry of Defense discussions with the idea that, if U.S. and Russian officials could agree on the principles and framework for missile defense cooperation, the dialogue could then be shifted to the NATO-Russia channel.[14]

The discussions between the Defense Department and Ministry of Defense reportedly found considerable convergence on what a cooperative missile defense might look like: transparency regarding missile defense systems; a joint analysis of the impact of missile defense on the U.S. and Russian strategic deterrents; joint missile defense exercises; a jointly-manned "data fusion center," where the sides would share early warning data, and a jointly-manned "planning and operations center," where the sides might, among other things, discuss how to coordinate rules of engagement if their missile defense systems provided overlapping coverage. U.S. and Russian officials notionally agreed that the sensors—including radars and satellite-based sensors—would remain under national control, and each side would retain control over any decision to launch its interceptor missiles. U.S. and Russian officials also discussed a defense technology cooperation agreement, which would have to be in place as an umbrella agreement in order to share classified or sensitive information, including early warning data.

In spring 2011, Russian officials began to call, both privately and publicly, for a "legal guarantee" that U.S. missile defenses in Europe would not be directed

against Russian strategic missiles. They added that such a guarantee should be accompanied by "objective criteria" regarding the numbers, velocity and location of missile defense interceptors in the EPAA system. As explained by a group of Russian analysts, Moscow's position would mean "non-deployment of tracking and interception instruments in certain areas, restrictions on the speed and effective range of interceptors, and limitation of the number of interceptors in defined areas. These guarantees should be featured in an international treaty."[15]

The Obama administration regarded a legal guarantee on missile defense as a non-starter. It would have to be recorded in a treaty, requiring Senate ratification. As had been made clear during the 2010 ratification debate over New START, anything that looked even remotely like limits on missile defense had zero chance of gaining Senate ratification. U.S. officials told their Russian counterparts that the United States was prepared to offer a political assurance that U.S. missile defenses were not directed against Russia and to put it in writing, signed at the highest level. They made clear that they could not conclude a legally-binding agreement to limit missile defense.

U.S. officials hoped that the late May 2011 meeting between Obama and Medvedev on the margins of the G-8 summit in France might offer an opportunity for the leaders to announce an agreement on principles of missile defense cooperation. U.S. and Russian officials met in Moscow a few days before the summit and reached ad ref agreement on a joint presidential statement, but both sides had to stretch their instructions to reach the agreement. Neither Washington nor Moscow was fully comfortable with the resulting draft statement, and the presidents did not issue a statement on missile defense following their meeting. (Russian officials later contended that they had secured presidential-level approval of the draft statement and asserted that the U.S. side deserved blame for failing to do the same.)

U.S. officials continued to hold out hope in fall 2011 that the Russians might back off of their demand for a legal guarantee and accept a political assurance in some form. That would open the possibility for a NATO-Russia summit in May 2012 in Chicago that could move forward on missile defense cooperation. The Russians, however, did not budge. Consultations between U.S. and Russian officials continued into 2012 on missile defense and strategic stability issues, but they appear to have made no progress in resolving differences over Russia's call for a legal guarantee.

In March 2012, the Russian government advised that Putin, who would be sworn in as president on May 7, would not travel to Chicago. When Obama and Medvedev met in Seoul on March 26, they agreed that the sides continued to differ over missile defense but that they would continue to seek a solution. In April, following a NATO-Russia ministerial meeting, Russian Foreign Minister Sergey Lavrov reaffirmed Moscow's requirement for a guarantee and objective criteria.

4. The Russian View

What's Behind the Russian Position

The Russian government originally appeared to welcome the EPAA as a substitute for the Bush administration plan to deploy two-stage GBIs in Poland, in part because the SM-3 interceptor—less than a tenth the weight of a GBI—has a significantly lower velocity and shorter intercept range. Over the past year, however, the Russians have taken a harder line and insisted on a legal guarantee that U.S./NATO missile defenses would not be directed against Russian strategic missiles. That has proven a roadblock to a cooperative NATO-Russia missile defense arrangement.

Russian officials have also linked missile defense to other issues, suggesting that Russia was unready to proceed with further nuclear arms reductions beyond the New START Treaty until Washington addressed Russian concerns on missile defense and other questions. In March 2011, Lavrov told the UN Conference on Disarmament: "We insist that there is a clear need to take into account the factors that negatively affect strategic stability, such as plans to place weapons in outer space, to develop non-nuclear armed strategic offensive weapons, as well as unilateral deployment of a global BMD [ballistic missile defense] system."[16]

In a November 23, 2011 statement, Medvedev reiterated Russian concerns over missile defense, noted that Russia sought a guarantee set "out on paper in the form of clear legal obligations," and listed a range of measures that Moscow would take in response. These included commissioning a new early warning radar in Kaliningrad; strengthening Russia's aerospace defense, including by deployment of S-400 and S-500 interceptors; equipping Russian ICBMs and SLBMs with more advanced penetration aids; developing the capability to attack NATO control systems for missile defense; and deploying modern weapons in locations where they could "take out any part of the U.S. missile defense system in Europe. One step in this process will be to deploy Iskander missiles in Kaliningrad." Medvedev left the door open for further discussions with the United States and NATO and noted that U.S. plans would not threaten Russian strategic forces for six-eight years.[17]

As analysts pointed out, the Russian military was already pursuing most of these steps. For example, the radar in Kaliningrad had been under construction for years. With the exception of the threat to deploy Iskander missiles to Kaliningrad—which touched a nerve with nearby NATO allies—the measures generated little apparent concern in Washington.

The mix of motives that underlies Russian concern about the EPAA is not entirely clear. Russian officials have always had a healthy respect for U.S. technological prowess, and some in Moscow may genuinely fear that planned U.S. missile defenses will be able to challenge Russian strategic missiles. Others may not be concerned by the current plans, but many wonder what will come after the EPAA, given continuing U.S. interest in missile defense. Dmitry Rogozin, Russian Deputy Prime Minister—and former Russian ambassador to NATO, where he was closely involved in missile defense discussions—recently said: "There are no guarantees that after the

first, second, and third phases are completed, there will be no fourth, fifth and sixth. Do you really think they will halt all their technologies after 2020? That's nonsense! They will go ahead with developing and boosting the technical parameters of their interceptor missiles and performance capabilities of their warning systems."[18]

U.S. policy for 20 years—going back to the George H. W. Bush administration and as reflected in the National Missile Defense Act of 1999—is to defend the United States against a *limited* ballistic missile attack. Senior U.S. officials have repeatedly stated that the system is not directed against Russian strategic ballistic missiles or, for that matter, the considerably smaller force of Chinese ICBMs. Some Russians may, however, pay more attention to minority voices in Congress, such as that of Senator Jim DeMint, who in 2010 offered an amendment to the defense authorization bill to deploy as fast as technically possible a missile defense system capable of defending America and U.S. allies against "all" ballistic missile attacks. Rogozin complained in summer 2011 that several Senators he met with had openly said that missile defense was aimed at weakening the Russian deterrent. Russian officials have repeatedly stated that a legally-binding guarantee offers the only assurance that will "carry over" and be binding on a future U.S. administration that they fear might regard Russia with greater hostility than the Obama administration.

The Russians seem more concerned about the planned SM-3 deployment in Poland than that in Romania. This could be because the Polish site is closer to potential tracks of ICBMs from silos in Russia to the United States. U.S. officials say they have provided Russian Ministry of Defense officials with technical briefings showing why the SM-3 deployed in Poland, even SM-3 Block IIB, could not threaten Russian ICBMs. U.S. officials argue that, before launching an SM-3 from Poland against a Russian ICBM, U.S. or NATO commanders would have to wait until the ICBM had completed its boost phase in order to calculate its track for an intercept solution. Russian ICBMs heading for the United States would fly in a roughly northwestern-northern direction, not toward Poland. So the SM-3, once launched, would have to chase the ICBM. But the SM-3 would not have the velocity to catch up. The Russians say that they have not been persuaded by these presentations and express concern about potential deployment schemes such as SM-3 Block II interceptors on board U.S. warships stationed in the Baltic, Barents and Norwegian Seas.

More broadly, the Russian Ministry of Defense may be opposed in principle to cooperation. Following the May 2002 Bush-Putin summit in Moscow, when the leaders agreed to pursue missile defense cooperation, the Ministry of Defense showed little interest in follow-up. (To be fair, the Pentagon also showed little desire to engage.) The Russian military may calculate that a dispute over missile defense is more likely to enhance the resources it receives for force modernization, including of its air defense and missile defense capabilities.

Another motivation behind the Russian position is undoubtedly long-standing opposition to the deployment of U.S. military infrastructure on the territory of countries that joined NATO in and after 1999. Moscow remains profoundly unhappy about the Alliance's enlargement. Although the infrastructure and number of U.S. military personnel to support the SM-3 interceptors in Romania and Poland will be relatively small, the Russians plainly do not like it. (Russian attention over the past year has focused almost solely on the SM-3, particularly the later, more capable Block IIA and Block IIB variants. The Russians have said little about the 30 GBIs in Alaska and California, which have the velocity and range to engage ICBMs, even if the GBIs' ability to deal with the countermeasures on Russian missiles is dubious.)

Yet another reason relates to NATO. The Russians may be calculating—or hoping—that a failure to find a formula for NATO-Russia cooperation on missile defense would undercut support within the Alliance for missile defense in general. Thus far, however, NATO allies appear firmly behind the EPAA, even if few worry about an Iranian missile attack. Romania and Poland—who will host SM-3

interceptors and associated SPY-1 radars—welcome the prospective deployment as an added security guarantee. Other allies hope that missile defense will assume some of the Alliance's overall deterrence and defense burden previously borne by non-strategic nuclear weapons and thereby help make it possible for NATO to reduce or eliminate those weapons. Still other allies recognize that the EPAA matters to Washington and are inclined to be supportive. It is highly unlikely that missile defense will provoke the kind of tensions within NATO that the prospective deployment of nuclear-armed Pershing II and ground-launched cruise missiles did in the early 1980s. Any Russian hope of using this issue as a wedge-driver may be misplaced.

Finally, the continued Russian insistence on a legal guarantee suggests that Moscow has decided to go into a holding pattern on the missile defense issue, as the Russians wait to see who wins the U.S. presidential election in November. As early as mid-2011, Russian diplomats privately indicated that Moscow would not undertake new nuclear arms reduction negotiations until 2013, when they knew who would be in the White House for the next four years. The Russian reasoning was that a Republican president might bring a different approach to arms control than would Obama, if reelected. The same appears to hold true for missile defense.

There is a precedent for this. In 2000, then-President Putin decided not to pursue discussions with the United States on whether and how the ABM Treaty might be modified to accommodate the Clinton administration's NMD plans but instead opted to wait and deal with the new U.S. president in 2001. If Moscow wants again to put things on hold, insisting on a legal guarantee—when the Russian government well understands that the Obama administration cannot agree to that—is a convenient way to do so. Obama's "off mic" comment to Medvedev at the conclusion of their March 26 meeting in Seoul—"After my election, I have more flexibility"—likely will reinforce the Russian tendency to wait. (That said, Moscow should be realistic. Even if reelected, Obama would not be able to get a missile defense treaty ratified by the Senate as currently constituted.)

Do the Russians Have Reason for Concern?

U.S. officials repeatedly state that the EPAA, even Phase 4, will pose no threat to Russia. Following Medvedev's November 23, 2011 statement, White House, State Department and Defense Department spokesmen reiterated that the missile defense system was directed against Iran, not Russia, and would not threaten Russia's strategic missile force. Dean Wilkening, a physicist at Lawrence Livermore National Laboratory, recently examined Russian concerns. He concluded:

> "It appears, then, that BMD [ballistic missile defense] interceptors with speeds below approximately 5.0 kilometers/second launched from sites in or around Europe cannot intercept Russian ICBMs or SLBMs without violating the laws of physics. In those cases where some missile trajectories might be intercepted, cross-targeting of ICBMs [aiming ICBMs in western Russia at targets in the western United States so that their trajectory would fly further away from Poland] or lofting ICBM or SLBM trajectories [flying the ICBMs and SLBMs to higher apogees, taking them out of range of the SM-3] readily negates this capability. Moscow's concern with phases III and IV of the European Phased Adaptive Approach BMD architecture, therefore, lacks technical merit, unless the SM-3 Block IIB interceptor has a maximum speed greater than approximately 5.0 kilometers/second."[19]

At least one knowledgeable Russian seems to agree with Wilkening. Yuriy Solomonov, chief designer responsible for the newest strategic ballistic missiles in the Russian inventory, took part in a late February 2012 meeting with Putin devoted to national security and defense questions. Solomonov recalled how the initial panicky Soviet reaction to the Strategic Defense Initiative had proven baseless and stated: "My point is that we've been hearing a lot of similar talk about the missile defense system in Europe. In most cases, and I'm saying this absolutely officially

and competently, this is an absolutely far-fetched threat to our strategic potential."[20]

Yousaf Butt, a consultant to the Federation of American Scientists, and Theodore Postol, a physicist at MIT, came to a different conclusion. They argue that SM-3 Block II interceptors with velocities of 4.5-5.0 kilometers per second could have some capability to engage Russian ICBMs if deployed on ships operating off the U.S. coasts (as opposed to the site in Poland). Such deployments would eliminate the problem of having to chase Russian ICBMs and could negate the cross-targeting tactic. Somewhat paradoxically, however, Butt and Postol also argue that, due to the inability of the infrared seeker to discriminate between a warhead and decoy or other countermeasures, "SM-3s will never be able to reliably function in real combat conditions," and "the planned [European] PAA midcourse defense system cannot devalue the nuclear deterrent forces of any nation."[21]

The short answer to the question is that no one knows with certainty. The SM-3 Block IIB is still being designed, so its ultimate capabilities are at this point unknown. If the interceptor performs as advertised, it would have some capability to engage and destroy ICBM warheads. But the SM-3 Block IIB is projected to be a relatively small portion of the 500-550 SM-3 missiles to be procured over the coming decade. The SM-3 Block IIBs would have a very difficult time coping with a large number of ICBMs and SLBMs—as of March 2012, the Russians had some 420 deployed ICBMs and SLBMs with about 1,425 warheads—particularly if the missiles deployed decoys, chaff and other countermeasures. As the Department of Defense acknowledges, discriminating a real warhead from balloons or other decoys poses one of the most daunting technological challenges for an effective missile defense system.

5. Models of Cooperation

Converging U.S. and Russian Ideas

Considerable thought over the past two years has gone into what a cooperative NATO-Russia missile defense arrangement might look like in practical terms. There appears to be significant convergence in thinking, both in official U.S.-Russia channels and in U.S.-Russia Track II dialogues.

As noted, Defense Department and Ministry of Defense officials have reportedly found considerable convergence on what missile defense cooperation would entail. One element would be transparency regarding missile defense systems and capabilities. Defense Department officials have indicated that, in a cooperative arrangement, they would be prepared to share some sensitive information with the Russians (hence the need for a defense technical cooperation agreement). They have not specified what that information would be.

Missile Defense Agency head O'Reilly said in fall 2011 that he would be prepared to organize visits by Russian experts, with their own sensor equipment, to observe SM-3 tests. Assuming that this would also apply to tests of the SM-3 Block IIA and Block IIB interceptors, which will not take place for several years, the offer could allow the Russians to observe the interceptors about which they express the greatest concern in order to assure themselves that those missiles lack the capabilities to engage Russian strategic missiles. Moscow has not yet taken up this offer. (The 2012 National Defense Authorization Act requires 60 days notice to Congress before sharing with the Russian government classified information regarding missile defense; when signing the act, the president issued a signing statement noting that the administration would interpret the act "in a manner that does not interfere with the president's constitutional authority to conduct foreign affairs.")

A second element for a cooperative arrangement would be joint missile defense exercises. The United States, NATO and Russia already have experience in this regard: Russia between 1996 and 2008 conducted a variety of computerized and command post exercises, both bilaterally with the United States and with NATO. (A NATO-Russia theater missile defense command post exercise was planned for fall 2008 but fell victim to the downturn in NATO-Russia relations following the Russia-Georgia conflict.) NATO and Russia conducted a computer-assisted missile defense exercise in late March 2012. Continuing such exercises would allow the militaries to gain familiarity with the equipment, doctrine and tactics of the other side. This experience could prove useful in developing a cooperative missile defense system.

A third element would be jointly-manned NATO-Russia centers, an idea put forward by the Russians in late 2010. One would be a data fusion center, modeled on the Joint Data Exchange Center originally agreed in 1998 between Washington and Moscow as a bilateral mechanism to share early warning data on ballistic missile launches around the world. (For a variety of reasons, with blame falling on both sides, that agreement was never implemented.) Each side would provide the data fusion center data from its radars and satellites, which would remain under

national control. At the jointly-manned center, the data would be combined to provide a "common operational picture" displaying possible missile launches from the Middle East, and the enhanced product would then be sent back to the sides' missile defense command centers. Such a data fusion process would allow, for example, NATO access to data from the radars at Armavir and Gabala to confirm data provided by the AN/TPY-2 radar in Turkey and other U.S. sensors. That could prove useful in the event of an Iranian ballistic missile test or actual launch against NATO and provide earlier data than the AN/TPY-2. (Note that the data shared under this plan would focus on Europe and launches from the Middle East, while the Joint Data Exchange Center envisaged sharing of data on worldwide launches.)

The sides have also discussed a joint planning and operations center. This could provide a venue for implementing agreed transparency measures, exchanging updated threat assessments, and discussing possible attack scenarios. NATO and Russian officials have each stated that they would retain control over a decision to launch their own interceptors—given the short flight times of ballistic missiles, there would be no time to coordinate a launch decision even if the sides were inclined to consult. The planning and operations center could address issues such as coordinating rules of engagement if NATO and Russian missile defense systems were to provide overlapping coverage and could develop preplanned responses. It is possible that some NATO members in Central/Eastern Europe and some parts of western Russia might fall under the coverage of both NATO and Russian interceptors.

Track II Dialogues

Over the past two years, several U.S.-Russia Track II dialogues have addressed principles or models for missile defense cooperation, developing ideas consistent with those discussed in official channels in 2011. A June 2010 Track II discussion led by former Secretary of State Madeleine Albright and former Russian Foreign Minister Igor Ivanov, and supported by the Brookings Institution and Institute for World Economy and International Relations, produced a memorandum for senior U.S. and Russian officials which, among other things, offered a set of principles to guide NATO-Russia or U.S.-Russia missile defense cooperation. They included: a focus on "detecting and defending against intermediate- and shorter-range ballistic missiles" (to avoid the question of cooperation that might undermine a side's strategic deterrent); transparency on missile defense systems, including the U.S. SM-3, Patriot PAC-3 and THAAD, and the Russian S-300, S-400 and S-500 plus associated radars and sensors; transparency on possible missile defense deployment options; "a focus on regional threats to Europe, including European Russia," which might minimize Chinese concerns; a "complementary rather than 'joint' defense," in which each side would retain control over a decision to launch its interceptors; and a division of responsibilities so that "the United States would have responsibility for intercepting ballistic missiles aimed at NATO members; Russia would have responsibility for intercepting missiles aimed at Russia," with the proviso that either side might in advance authorize the other to engage a missile aimed at it.[22]

The Sustainable Partnership with Russia (SuPR) Track II dialogue, organized by the PIR Center (Russian Center for Policy Studies) and the Ploughshares Fund, held a detailed discussion on missile defense at a February 2011 meeting. In a subsequent memorandum that was submitted to the U.S. and Russian governments, the participants proposed transparency regarding missile defense systems, "integration of warning and assessment data from U.S. and Russian radars and other sensors in a single, jointly-manned NATO-Russia center," and "integration of the decision to launch an interceptor missile by agreeing in advance on a set of NATO-Russia protocols that would determine whether NATO and/or Russian interceptors would engage a particular ballistic missile." The protocols would be worked out in advance by NATO and Russian military experts and would be provided to NATO and Russian officers controlling the launch of NATO and Russian missile interceptors. The protocols would serve the purpose of coordinating separate NATO and Russian launch decisions without need for a single NATO or Russian commander.[23]

The most detailed Track II discussion of NATO-Russia missile defense cooperation took place in the context of the Euro-Atlantic Security Initiative (EASI), led by Ivanov, former German State Secretary Wolfgang Ischinger and former Senator Sam Nunn and organized by the Carnegie Endowment for International Peace. The EASI working group on missile defense—co-chaired by former National Security Advisor Stephen Hadley, former Russian Deputy Foreign Minister Vyacheslav Trubnikov and former German Defense Minister Volker Ruehe—produced in 2011 a notional architecture that was briefed to U.S., NATO and Russian officials and subsequently released publicly in February 2012. The EASI proposal laid out a cooperative missile defense system that would be designed to deal with ballistic missiles with ranges up to 4,500 kilometers (avoiding the issue of strategic missiles).

Under the EASI plan, data and other information from NATO and Russian radars and early warning satellites would be provided in real time to two cooperation centers, one located in Warsaw and the second located in Moscow. NATO and Russian military officers would jointly man the two centers. The centers would combine incoming data and other information, with the enhanced product then sent back to NATO and Russian command and control centers, which would separately retain the authority to launch their interceptor missiles. While the plan would leave each side the responsibility to protect its own territory, the sides might develop protocols for intercepting a ballistic missile warhead crossing one side's territory but aimed at a target on the territory of the other side.[24]

The fusing of the data would mean that the United States and NATO would gain access to information from Russian early warning satellites and from the radars at Armavir and Gabala, while Russia would gain access to information from U.S. Defense Support Program satellites and the AN/TPY-2 radar in Turkey. The EASI working group outlined three phases for implementing its plan.

Most suggestions for missile defense cooperation focus on how existing and planned U.S./NATO and Russian defense capabilities might be operated in a complementary or integrated manner to defend Europe, including European Russia. An intriguing proposal by Wilkening suggests that NATO and Russia together build an early warning radar, with a 360 degree field of view, in central Russia. The radar would provide data directly to Russian and NATO data-processing centers. The radar would plug an existing gap in Russia's early warning coverage. It would also provide the United States tracking information on a future Iranian ICBM launched at the western United States after it left the field of view of the AN/TPY-2 radar in Turkey and before it entered the field of view of U.S. radars in Alaska and Greenland.[25]

What emerges from this discussion is that there is a rich menu of ideas in both governmental and non-governmental channels as to how a cooperative NATO-Russia missile defense system might be structured and how it might work. Many of the plans share common elements: transparency regarding missile defense programs; joint exercises; operating radars, other sensors and interceptors under separate NATO and Russian control; and the concept of centers jointly manned by NATO and Russian military officers. Such ideas have been discussed in the Department of Defense-Ministry of Defense channel. If a way can be found around the legal guarantee obstacle, the sides might find that it would not be difficult to work out the specifics of a practical cooperative arrangement.

6. Transparency and Arms Control

Not Limits, But Transparency?

The Russian proposal for a legal guarantee that the U.S./NATO EPAA will not be directed against Russian strategic missiles accompanied by objective criteria—which translate into limits on numbers, velocities and locations of missile defense interceptors—would amount to a new treaty limiting missile defense. For the foreseeable future, however, there is no chance that the U.S. Senate would ratify such a treaty, and the Obama administration has shown no interest in pursuing one.

If the U.S. administration is either disinclined or unable to negotiate a treaty, there are ways short of a treaty to reassure the Russians about the capabilities of U.S. missile defenses and the inherent limits on those capabilities. For example, transparency measures—such as the test observations offered by the Missile Defense Agency director—could allow the Russians to observe the velocity and range of SM-3 interceptors. That would better inform their calculations as to whether or not such interceptors could engage Russian strategic missiles.

The U.S. government might also offer to make an annual declaration to the Russian government regarding U.S. missile defense systems. For key missile defense elements—including GBI and SM-3 interceptors, GBI silos, SM-3 land-based launchers, SPY-1 and AN/TPY-2 radars, and Aegis missile defense-capable warships—the declaration would comprise the following:

- Numbers of interceptors (broken down by GBI, SM-3 Block IA, SM-3 Block IB, SM-3 Block IIA and SM-3 Block IIB), GBI silos, SM-3 land-based launchers, associated radars and Aegis-capable ships in the U.S. inventory as of the date of the declaration. This would give the Russians a detailed picture of current U.S. missile defense capabilities.

- Numbers of interceptors (again broken down by type), GBI silos, SM-3 land-based launchers, associated radars and Aegis-capable ships planned to be in the U.S. inventory each year for the next ten years. This would give the Russians a detailed picture of planned future U.S. missile defense capabilities.

Along with the declaration, Washington could commit to provide the Russians advance notice of any changes in the planned numbers. The advance notice would derive from the fact that it takes time to contract, build and deliver new weapons systems, especially sophisticated systems. The Pentagon could calculate for each declared element of the U.S. missile system—interceptor, silo, launcher, radar or ship—the time from a decision to procure to actual delivery, and the U.S. government could inform the Russian government that it would have at least that much notice of a change in planned numbers. The advance notice time would vary with the element of the missile defense system; it presumably would be shorter for an increase in the number of SM-3 interceptor missiles than it would be for the construction of a new Aegis-capable warship, with the advance notice of a change in the number of ships measurable in years.

This kind of declaration would give the Russian government a regularly updated, rather complete picture of existing and planned U.S. missile defense capabilities over the next ten years, as well as an assurance of advance notice of changes. It would not constitute a limit; indeed, much of the information could probably be found by a diligent search of Defense Department appropriation bills. In contrast, if a transparency regime were reciprocal—with Russia providing corresponding information on its missile defense systems, such as the S-400 and S-500 interceptors—the United States would gain information not otherwise available. (Such an exchange of information might have to be non-public, given the traditional Russian antipathy to sharing their defense plans.)

An Arms Control Limit?

Were political circumstances in the United States to change, and if the Russians did not seek to constrain missile defenses too tightly, it might be possible to design a limited-duration arms control agreement in a way that would (1) reassure Russia that there is no threat to its strategic ballistic missile force and (2) allow the United States and NATO to do everything that they would want to do to defend themselves against limited ballistic missile attack from rogue states such as Iran and North Korea.

The Russians appear to accept that SM-3 Block IA and Block IB interceptors are too slow to engage their strategic missiles; Russian analysts seem divided over whether the SM-3 Block IIA would pose a threat. Moscow's primary concern focuses on the SM-3 Block IIB. Based on current U.S. plans, the number of SM-3 Block IIB interceptors plus GBIs in eight-ten years is likely to number, at most, 100-125 missiles. This would include the deployment of 14 GBIs in the additional interceptor silos under construction at Ft Greely—for a total of 44 GBIs in Alaska and California. This also assumes that the SM-3 Block IIB program proceeds on schedule, which may be optimistic given that this interceptor is still being designed and faces significant technical challenges.

An agreement of ten years' duration that limited each side to no more than 100-125 deployed interceptors with a velocity of five kilometers per second or greater could assure Russia that its strategic ballistic missile force would remain capable of inflicting enormous damage on the United States (and vice versa). At the same time, such a constraint would allow the United States a significant capability to defend against rogue state ICBM warheads. Neither Iran nor North Korea today has an ICBM, and it is unclear how quickly either could deploy one. The development and testing of an ICBM would be visible to U.S. sensors, and it would take several years from the first test to achieve an initial operational capability. So, by 2020 or 2022, one could expect that rogue states would have, at most, a handful of ICBMs.

Verification measures could be worked out to allow the sides to monitor such a limit on interceptors. It might be possible to work out a limit on radars in order to keep a side from putting in place the radar infrastructure that could facilitate a breakout from the agreement by rapidly increasing the number of interceptors.

The Russians would seek limits on locations of interceptors. This could pose a harder question, as Moscow undoubtedly would press to bar deployment of U.S. interceptors in Poland and possibly Romania. The U.S. government likely feels that it has to go forward with deployments in both European countries. That is a result of the difficult political blowback from NATO allies in Central and East Europe that followed the badly handled September 2009 announcement of the reconfiguration of U.S. missile defense plans for Europe, as well as the overall need to assure those allies of the U.S. commitment to their security. The Russians might also seek "keep-out" zones for U.S. Navy warships equipped with SM-3 interceptors in areas such as the Arctic Ocean or Barents Sea. However, if the United States agreed to restrict its total number of missile interceptors capable of engaging ICBM warheads to 100-125, the Russian ICBM and SLBM force could readily overwhelm the interceptors, and there would be no need for limits on location.

Of course, such a treaty would not apply only to U.S. missile defenses. It would also apply to the Moscow ABM system and, depending on their capabilities, other Russian missile interceptors.

Arguably, such an agreement, limited to ten years' duration, would not prevent the United States from doing anything that it plans to do over the next decade in the field of missile defense. Yet it still would offer Russia a significant degree of assurance that missile defense would not undermine its strategic deterrent.

The problem with this or any missile defense agreement, however, is that, under current circumstances on the American side, no treaty on missile defense—not even one that would only prevent the United States from doing things that it does not intend to do—would have any chance of ratification in the U.S. Senate. U.S. government officials indicated privately in 2011 that, given the degree of hostility in Congress to any hints on limits on missile defense, they had not considered what an arms control approach might look like and saw no point in doing so.

Eventually, a Choice to Be Made

Even were transparency ideas as described above to help move Russia off its current demand for a legal guarantee and open a path for practical NATO-Russia missile defense cooperation, the issue of treaty limits on missile defense may well return in the future. Missile defense technologies will probably improve. The Russians have a legitimate concern that a large, effective American missile defense system may at some point be capable of seriously degrading the Russian strategic deterrent, just as the United States would be understandably concerned—as Washington has been in the past—about the prospect of Russia successfully deploying a nationwide missile defense that could seriously degrade the U.S. strategic deterrent. Development by either side of such a system would reawaken concerns about strategic stability, including both arms race and crisis stability.

Given the current state of the technology and the imposing costs of missile defense, neither the United States nor Russia has a prospect in the next ten years of defending itself against anything other than a limited ballistic missile attack. But as technologies mature and possible new technologies emerge, it may become possible to do more in the missile defense area.

The issue will become more relevant if the United States and Russia proceed, as the Obama administration desires, to negotiate further reductions in their strategic offensive forces below the limits in New START. As the numbers of strategic ballistic missiles and warheads in the U.S. and Russian arsenals are reduced, the more manageable the task for missile defense will become. Concern may grow on one side or both about the ability of missile defenses to cope successfully with strategic offensive forces and thus undermine deterrence.

If Obama or a successor president wishes to continue the process of nuclear reductions, he (or she) might at some moment reach the point where the Russians decline to reduce strategic arms without a treaty limiting missile defense, particularly the number of interceptor missiles, or some other kind of agreement that constrains defenses (some have suggested a treaty might limit strategic warheads and missile defense interceptors under a single cap, with each interceptor counting as some fraction—say, one-half or one-fifth—of a warhead). At that point, the U.S. president could face a difficult choice between further nuclear reductions and freedom to pursue missile defense. But that potential dilemma is for the future.

7. Pursuing Cooperation over Contention

Given the current state of technology, while it is in the U.S. interest to pursue missile defense against limited ballistic missile attack, such as might be mounted by a rogue state, it is not now in the U.S. interest to attempt to defend the U.S. homeland against a large-scale Russian missile attack. The technology does not exist, the costs would be too high, and trying would almost certainly provoke a Russian missile build-up, resulting in an increase in the number of nuclear weapons capable of striking the United States. Between major powers and in the realm of strategic arms, offense can still win the race with defense.

For the time being, missile defense falls into the category of difficult issues in U.S.-Russia and NATO-Russia relations. Achieving a NATO-Russia cooperation agreement appears all but impossible in 2012. The Russians seem to have decided to sit tight, waiting to see whether Obama will win reelection in November or whether they will be dealing with a Republican president. As Medvedev acknowledged in November 2011, the problem does not become acute for Moscow for six-eight years. In an intensely political period in the run-up to the U.S. election, the Obama administration likely feels constrained on what it can pursue. The reaction to the open mic incident in Seoul suggests that even transparency measures might be seized upon by opponents to charge that the president is on a slippery slope or not fully committed to missile defense.

Assuming that declining U.S. defense resources do not force a rethink of missile defense—which may well be one of the programs insulated from significant cuts—and European support continues, there is every reason to believe that the EPAA will go forward. The U.S. and NATO objective should be to keep the door open for NATO-Russia missile defense cooperation in 2013. Then, the United States and NATO could offer a package to encourage Russia to join in a cooperative missile defense. Such a package could include some or all of the following measures:

- A U.S. and NATO political commitment not to direct their missile defenses against Russian strategic ballistic missiles.

- Maximum transparency regarding planned U.S. missile defenses. This should include an offer of an annual notification laying out the numbers of key missile defense elements—interceptors (broken down by GBI, SM-3 Block IA, SM-3 Block IB, SM-3 Block IIA and SM-3 Block IIB), GBI silos, SM-3 land-based launchers, associated radars and Aegis-capable ships carrying SM-3 interceptors—currently deployed and planned for deployment each year over the next decade. This should be accompanied by a commitment to provide the Russians notice in advance should there be changes in any of those planned deployment numbers. Ideally, this would be on a reciprocal basis.

- Technical briefings as to why the Defense Department concludes that U.S. missile defenses will not threaten Russian strategic ballistic missiles (as have been done in the past).

- Reiteration of the offer to allow Russian experts, using their own sensors, to observe SM-3 interceptor tests, with sufficient advance notification so that the Russians can properly prepare to observe the tests.

- Indicating that a cooperative NATO-Russia missile defense arrangement could be of a provisional, time-limited nature. It could be limited to four years, with NATO acknowledging at the outset that (1) Moscow has strong concerns regarding U.S./NATO missile defense capabilities and (2) Russia's decision to agree to a provisional cooperative arrangement does not preclude that Moscow may decide not to make the arrangement permanent if it believes that U.S./NATO missile defense capabilities will threaten its strategic forces. The point of a provisional agreement would be to allow NATO-Russia engagement, which U.S. and NATO officials argue will result in a better Russian understanding that their missile defense capabilities pose no threat to Russia. If they are right, Moscow has the option to make the arrangement permanent. If not, the Russians can walk away, and NATO will have acknowledged that at the outset.

- Indicating that, as long as the ability of NATO's missile defense to protect all Alliance members is not degraded, NATO is prepared to listen to and accommodate reasonable Russian suggestions for a cooperative arrangement. This would replace the current U.S./NATO stance, which is that cooperation with Russia would in no way affect NATO's missile defense plans. That only feeds a view in Moscow that a NATO-Russia arrangement would not truly be cooperative or allow Russia a serious voice. The Alliance should pursue cooperation in a manner that does not degrade the ability of NATO's planned missile defenses to defend all members of the Alliance; if that goal can be protected, NATO should show flexibility to consider accommodating Russian ideas.

- Indicating that the "adaptive" part of the EPAA includes a possibility that the United States might slow development of and/or in consultation with NATO might choose to delay deployment of the SM-3 Block IIB if it were clear that Iran was not making significant progress toward achieving an ICBM. If/once it become clear that Iran would not have an ICBM in 2020, the deployment of the SM-3 Block IIB in Europe by that date would not be necessary. (Since the SM-3 Block IIB is also intended to enhance capabilities against intermediate-range ballistic missiles, Iranian progress toward achieving an intermediate-range ballistic missile might alternatively be made the litmus test.)

- Establishing regular U.S.-Russia (or NATO-Russia) ballistic missile threat assessment conferences, focusing on North Korea and Iran, to close the gap in the sides' estimates of those countries' missile capabilities.

The United States should also continue to work with Russia to negotiate a defense technical cooperation agreement, which, among other things, would provide an umbrella for the exchange of sensitive information, such as early warning and tracking data.

These ideas constitute a package that could provide Russia substantial and ongoing transparency regarding U.S. missile defense plans. In 2013, if Moscow is prepared to move beyond its current holding pattern, these ideas would provide a basis for engaging the Russians and for moving to design the practical elements of a cooperative missile defense arrangement between NATO and Russia, drawing on the ideas already developed in official and Track II channels. (Presidential leadership would be needed on both sides to ensure that the militaries and defense bureaucracies make cooperation a priority and not drag their feet.)

After November 2012, the Russians will know who they will be dealing with in the White House for the next four years. While they may not like the U.S./

NATO missile defense project, they may see value in cooperating rather than sitting on the sidelines and appearing impotent to affect NATO's plans. If, however, the Russian were to choose not to engage, the United States and NATO could proceed, having made more than a good faith effort to address and mitigate the basis for Russian concerns.

Some of these ideas would prove controversial in Washington. Some in Congress will fear that transparency measures might morph into undeclared limits. Even in the absence of such measures, however, the Russians likely could learn details of U.S. missile defense plans by closely following the Congressional budgeting process and Pentagon multi-year plans. Some will be concerned that Russian observation of SM-3 tests will reveal too much information, such as the missile's maximum velocity at burn-out. But SM-3 interceptors are not intended to be used against Russian missiles, and the Russians may be able to observe tests anyway, as they generally take place in/over international waters. For the most part, these measures would provide the Russians information that they could, at some cost, acquire on their own.

Still others will be concerned by a readiness to adjust NATO plans to accommodate Russian wishes. However, as long as the Alliance's ability to extend missile defense protection over all allies is not compromised, why would there be a problem? And some will object that offering to slow development and/or deployment in Europe of the SM-3 Block IIB "changes" U.S. plans and would be inconsistent with Obama's pledge to go forward with all four phases of the EPAA. (U.S. officials in the past have said that "adaptive" refers to changes in the numbers of different types of SM-3 interceptors but that the U.S. government would pursue all four phases.) If, however, as 2020 approaches, Iran does not have an ICBM (or is slow to develop an intermediate-range ballistic missile), what would be the point of deploying the SM-3 Block IIB in Poland? There is a political argument for deploying the SM-3 Block IIA there (for assurance purposes), but the rationale for deploying an interceptor for which there is no Iranian missile to defend against is not clear. These are issues on which a greater degree of U.S./NATO flexibility than has been articulated might increase the prospects for agreement with Russia without compromising the system's ability to defend NATO Europe and the United States against limited ballistic missile attack.

The United States and NATO should seek to make it as easy as possible for Moscow to agree to a cooperative missile defense arrangement. Ultimately, the Russians will have to decide how to respond. If they hold to their demand for a legal guarantee—which Putin himself did not seek when suggesting missile defense cooperation in 2007—there will be no cooperative agreement. The sides will then have to look at ways to manage this problem and avoid missile defense differences infecting broader areas of their relations.

A Russian readiness to accept a political commitment that U.S. missile defenses were not directed against their strategic ballistic missiles in lieu of a legal guarantee, on the other hand, would open dramatic potential for cooperation. The reported convergence in the sides' thinking could presage a relatively rapid realization of a NATO-Russia missile defense arrangement. That would be in the U.S. interest, making missile defense a cooperative asset rather than a liability on the U.S.-Russia and NATO-Russia agendas, providing for a stronger missile defense of Europe, and perhaps proving a game-changer in broader NATO and Russian attitudes toward each other.

Endnotes

[1] For a history of the negotiation of the ABM Treaty, see John Newhouse, *Cold Dawn: The Story of SALT*, Holt, Rinehart and Watson, New York, 1973.
[2] Reagan Presidential Library, "Address to the Nation on Defense and National Security," March 23, 1983, http://www.reagan.utexas.edu/archives/speeches/1983/32383d.htm.
[3] U.S. Congress, "National Missile Defense Act of 1999."
[4] See Strobe Talbott, *The Russia Hand*, Random House, New York, 2002, pp. 377-397.
[5] NATO, "Bucharest Summit Declaration Issued by the Heads of State and Government participating in the meeting of the North Atlantic Council in Bucharest on 3 April 2008," http://www.nato.int/cps/en/natolive/official_texts_8443.htm.
[6] See Steven A. Hildreth and Carl Elk, "Long-Range Ballistic Missile Defense in Europe," Congressional Research Service, December 8, 2008, pp. 15-17.
[7] The White House, "Fact Sheet on U.S. Missile Defense Policy: A 'Phased Adaptive Approach' for Missile Defense in Europe," September 17, 2009.
[8] Short-range ballistic missiles are missiles with ranges up to 1,000 kilometers. Medium-range ballistic missiles have ranges of 1,000-3,000 kilometers. Intermediate-range ballistic missiles have ranges of 3,000-5.500 kilometers. ICBMs have ranges of 5,500 kilometers or greater. Note that the 1987 treaty banning U.S. and Soviet ground-based intermediate-range ballistic and cruise missiles uses a different definition, categorizing missiles with ranges between 500 and 5,500 kilometers as intermediate-range.
[9] Some U.S. Navy ships also carry the Standard SM-2 missile, a terminal defense interceptor designed to engage ballistic missiles in the atmosphere employing a blast-fragmentation warhead. The Navy's inventory numbers less than 100 SM-2 interceptor missiles.
[10] The following information draws on "Ballistic Missile Defense Review Report, February 2010," U.S. Department of Defense; Ronald O'Rourke, "Navy Aegis Ballistic Missile Defense (BMD) Program: Background and Issues for Congress," Congressional Research Service, December 22, 2011; and Arms Control Association, "The Phased Adaptive Approach at a Glance," http://www.armscontrol.org/factsheets/Phasedadaptiveapproach.
[11] "Statement of the Russian Federation Concerning Missile Defense," April 7, 2010.
[12] NATO, "Lisbon Summit Declaration: Issued by the Heads of State and Government participating in the meeting of the North Atlantic Council in Lisbon," November 20, 2010.
[13] NATO-Russia Council Joint Statement, November 20, 2010.
[14] The following discussion is based in part on conversations with American and Russian officials, 2011-2012.
[15] V. I. Trubnikov, Ye. P. Buzhinsky, V. Z. Dvorkin, V. I. Yesin, V. V. Korbelnikov and F. G. Voitolovsky, "Problems and Prospects of Russia's Cooperation with U.S./NATO in the Field of Missile Defense," Institute of World Economy and International Relations, 2011.
[16] Ministry of Foreign Affairs of the Russian Federation, Information and Press Department, "Statement by H.E. Mr. Sergey Lavrov, Minister of Foreign Affairs of the Russian Federation, at the Plenary meeting of the Conference on Disarmament, Geneva, 1 March 2011," http://www.ln.mid.ru/bdomp/brp_4.nsf/e78a48070f128a7b43256999005bcbb3/2de66a92e764dbb8c3257846004dfd44!OpenDocument.
[17] President of Russia website, "Statement in Connection with the Situation Concerning the NATO Countries' Missile Defense System in Europe," November 23, 2011, http://eng.news.kremlin.ru/news/3115.
[18] RIA Novosti, "U.S., NATO Have Some 1,000 Interceptors—Rogozin," January 20, 2012, http://en.rian.ru/world/20120120/170856516.html.
[19] Dean Wilkening, "Does Missile Defence in Europe Threaten Russia?" *Survival*, vol. 54, no. 1, February-March 2012, pp. 31-52.
[20] Prime Minister of Russia website, "Prime Minister Vladimir Putin Meets with Experts in Sarov to Discuss Global Threats to National Security, Strengthening Russia's Defenses and Enhancing the Combat Readiness of its Armed Forces," February 24, 2012, transcript as reported on Johnson's Russia List, February 29, 2012.
[21] Yousaf Butt and Theodore Postol, "Upsetting the Reset: The Technical Basis of Russian Concern over NATO Missile Defense," Federation of American Scientists, FAS Special Report No. 1, September 2011.
[22] The Brookings Institution and Institute for World Economy and International Relations, "Next Steps on U.S.-Russian Nuclear Negotiations and Nuclear Non-Proliferation: Recommendations from the June 23 Meeting of Madeleine Albright, Strobe Talbott, Igor Ivanov and Aleksander Dynkin," October 2010, http://www.brookings.edu/papers/2010/10_nonproliferation_albright_talbott.aspx.
[23] PIR Center, "Recommendations of the Sustainable Partnership with Russia (SuPR) Group," March 2011.
[24] See Euro-Atlantis Security Initiative, Working Group on Missile Defense, "Missile Defense: Toward a New Paradigm," February 2012 for a fuller discussion.
[25] Dean Wilkening, "Cooperating with Russia on Missile Defense: A New Proposal," Arms Control Today, vol. 42, no. 2, March 2012, pp. 8-13.

About the Brookings Arms Control Initiative

The Brookings Arms Control Initiative brings the institution's multidisciplinary strengths to bear on the critical challenges of arms control and non-proliferation. Housed in the Center on the United States and Europe in the Brookings Foreign Policy Studies program, the initiative addresses global arms control and proliferation challenges as well as the central negotiations between the United States and Russia. Research by Brookings scholars in the Arms Control Initiative focuses on several clusters:

- nuclear arms reductions, including U.S.-Russian nuclear arms reductions; reductions of third-country nuclear forces; and the challenges of moving to a non-nuclear world;
- U.S. nuclear deterrence policy in the 21st century;
- nuclear non-proliferation challenges, including Comprehensive Test Ban Treaty ratification and entry into force; a fissile materials cut-off treaty; the April 2010 nuclear security summit; and strengthening the Non-Proliferation Treaty regime; and
- nuclear outliers (India, Israel and Pakistan) and rogue states (North Korea and Iran).

The initiative supports a dialogue led by former Secretary of State Madeleine Albright, Brookings President Strobe Talbott, former Russian Foreign Minister Igor Ivanov and Institute of World Economy and International Relations (IMEMO) Director Alexander Dynkin on U.S.-Russian cooperation on nuclear arms reductions and non-proliferation, which has produced joint recommendations that are shared with senior U.S. and Russian officials. The initiative also sponsors the Brookings Arms Control Roundtable Series and public events aimed at discussing the key arms control and non-proliferation challenges of the day. The initiative produces research and policy recommendations on these issues, including the Brookings Arms Control Series papers. This is the eighth paper in that series. Previous papers are listed below; all may be downloaded at http://www.brookings.edu/projects/arms-control/Arms-Control-Series.aspx.

#1 Resetting U.S.-Russian Leadership on Nuclear Arms Reductions and Non-Proliferation, by Steven Pifer, Joseph Cirincione and Clifford Gaddy, January 2010

#2 Salvaging the Conventional Armed Forces in Europe Treaty Regime: Options for Washington, by Anne Witkowsky, Sherman Garnett and Jeff McCausland, March 2010

#3 U.S. Nuclear and Extended Deterrence: Considerations and Challenges, by Steven Pifer, Richard C. Bush, Vanda Felbab-Brown, Martin S. Indyk, Michael O'Hanlon and Kenneth M. Pollack, May 2010

#4 The Next Round: The United States and Nuclear Arms Reductions after New START, by Steven Pifer, November 2010

#5 The U.S. Policy of Extended Deterrence in East Asia: History, Current Views and Implications, by Richard C. Bush, February 2011

#6 The Trilateral Process: The United States, Ukraine, Russia and Nuclear Weapons, by Steven Pifer, May 2011

#7 NATO, Nuclear Weapons and Arms Control, by Steven Pifer, July 2011

About the Author

Steven Pifer is a senior fellow in the Center on the United States and Europe and director of the Arms Control Initiative at the Brookings Institution. A retired Foreign Service officer, he served more than 25 years with the Department of State, including as deputy assistant secretary of state with responsibility for Russia and Ukraine, ambassador to Ukraine, and special assistant to the president and National Security Council senior director for Russia, Ukraine and Eurasia. He also served at the U.S. embassies in London, Moscow and Warsaw, in addition to assignments in Washington and in Geneva with the U.S. delegation to the negotiation on intermediate-range nuclear forces.

Pifer has authored numerous policy reports, academic articles and opinion pieces on arms control, Ukraine and Russia. He frequently comments on these issues in the media.

BROOKINGS
The Brookings Institution
1775 Massachusetts Ave., NW
Washington, D.C. 20036
brookings.edu