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POLICY OUTLOOK

Why Obama is Right on Missile Defense—What's Next?

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Summary

- The Obama administration's policy reversal on missile defense in Eastern Europe has sparked controversy. Critics contend that the Obama administration is kowtowing to Moscow and naively hoping for increased Russian pressure on Iran. However, a technical, financial, political and security assessment concludes that the course correction made by the Obama administration is the right one. U.S. missile defense installations planned for deployment in Eastern Europe were technically unproven and would have been an inefficient use of critical defense funds.

- The prospect of the new installations heightened U.S. tensions with Russia, exposed uncertainty among newer NATO members over the Alliance's collective security guarantees, and fell short of offering real muscle against a potential missile threat from Iran.

- The Bush administration's missile defense plans actually did a disservice to Poland and the Czech Republic by making both states more vulnerable to Russian coercion, while failing to provide either one with usable capability against a resurgent Russia.

- The United States should explore opportunities for joint missile defenses as a platform for constructively engaging Russia in European security, resetting Eastern European relationships, reinforcing NATO guarantees, and strengthening the deterrent against Iran.

When the Obama administration placed the U.S. missile defense program's European installations under review, it stated that the United States would "continue to develop missile defenses to counter a growing Iranian capability, provided the technology is proven and it is cost-effective."[1] The United States would move forward, the administration announced, through "consultations with … NATO allies and Russia."[2] A little after midnight on Thursday, September 17, 2009, President Obama telephoned Czech Prime Minister Jan Fischer and Poland's Prime Minister Donald Tusk to inform them that the review had been completed. The United States will not move forward with the planned installations in the Czech Republic and Poland, but will increase efforts to defend itself and its allies against ballistic missile attack under a new approach utilizing proven, available, and affordable technologies that would address the immediate short- and medium-range missile threats from Iran, namely SM-3 missiles aboard Aegis ships and, later, ground based missiles.

In anticipation of the criticism this change in policy will provoke, evaluating the viability of the Bush administration's missile defense plans in Eastern Europe is vital. This analysis assesses the technical, financial, political, and security implications of those plans and concludes that the course correction made by Obama is the right one.

Background

The United States has debated the feasibility of a missile defense shield since Germany used V-2 missiles against Allied targets in World War II. As missile range, accuracy, and warhead type progressed in the 1950s, so too did interest in anti-ballistic missile (ABM) defenses. Advancing Soviet technologies spurred missile defense research forward, and the October 1964 detonation of China's first atomic device prompted the United States to announce deployment of its first ABM system—Sentinel (based on Nike-X)—in September 1967. Developed as a thinly layered missile defense against N^{th}-country threats, the Nixon administration later halted its deployment. Following a reevaluation, the program was renamed Safeguard and reoriented as a thick defense to protect U.S. Minuteman II silos against Soviet intercontinental ballistic missile (ICBM) attack. Safeguard became operational in October 1975; however, by November, both the U.S. House of Representatives and Senate voted to terminate the program, as the Soviet Multiple Reentry Vehicle (MIRV) system could easily overwhelm its defenses. The multiple tasks of these early programs (defense against surprise or accidental launches, N^{th} country threats, Soviet ICBMs, and as a bargaining chip in bilateral arms control negotiations) heightened confusion and debate over missile defenses.[3] Forty-two years later, this debate continues with mounting confusion and criticism.

Missile defenses again rose to prominence with the election of George W. Bush in January 2001. As a candidate, Bush firmly backed a national missile

defense program, and upon winning the presidency, he tasked Secretary of Defense Donald Rumsfeld to consult with the United States' European allies. Following the completion of the 2002 Nuclear Posture Review, which declared the administration's intent to develop robust missile defenses, the United States moved more concertedly to firm up European support. In December 2002, the Bush administration issued National Security Presidential Directive-23 (NSPD-23) on ballistic missile defense and formally withdrew the United States from the bilateral ABM treaty with the Russian Federation so that it could develop missile defenses to protect the United States, its forward deployed troops, and its allies. Asserting that U.S. security strategy needed to advance beyond Cold War–style retaliatory-deterrence, and arguing that defensive systems have the potential to stabilize the security environment,[4] the Bush administration pursued missile defenses to hedge against future aggression from rogue states. Two years after withdrawing from the ABM Treaty, the United States installed missile defense sites at Fort Greely, Alaska, and Vandenberg Air Force Base, California. In July and August 2008 respectively,[5] the Bush administration signed missile defense agreements with the Czech Republic and Poland. Upon doing so, however, the administration tied missile defense to broader European security issues, most notably initiating a crisis of confidence in its bilateral relationship with Russia and exposing uncertainty among newer North Atlantic Treaty Organization (NATO) members in the Alliance's collective security guarantees.

Iranian Capability

The Obama administration cited the Iranian threat as an important consideration in the pursuit of missile defenses in Europe. Iran's advancing ballistic missile facility, combined with its refusal to halt enriching uranium, has fueled widespread accusations that Iran is seeking a nuclear weapons capability.[6] But what is the nature of the missile threat from Iran? Is the threat imminent? Too often, capability is often conflated with intent; thus, it is also important to consider whether the threat is likely to be realized. And if so, would installations in Poland and the Czech Republic, the so-called third site, have been effective?

Iran currently has four liquid-propellant, single-stage, ballistic missile systems: Shahab-1 (based on SCUD-B, 315 km range), Shahab-2 (based on SCUD-C, 375 km range), Shahab-3 (based on Nodong, 930 km range), Shahab-3M/Ghadr-1 Kavoshgar (modifications on Shahab-3, 1100 km range). Additionally, in February 2009, Iran launched a satellite by means of a two-stage, liquid-propellant system—the Safir space launch vehicle.[7] In April 2006, Israel's military intelligence chief reported that North Korea had sold Iran a 3,000 km range liquid-propellant ballistic missile (Musudan/BM-25 based on the SS-N-6), however, Iran has not acknowledged possession of this missile.[8] Iran has a solid-fuel missile program, which includes shorter-range missiles Tondar-69 (based on CSS-8, 150 km range) and Fateh-110 (300 km range). Iran also claims to have tested a solid fuel version of the Shahab-3 and

a 3000 km solid-fuel missile—Sejjil. After a May 20, 2009 successful test of the Sejjil, U.S. Secretary of Defense Robert Gates speculated that the range was closer to 1200–1500 km.[9]

Proponents of the third site argue that Iran's advancing missile capabilities should prompt the immediate construction of the European system in Poland and the Czech Republic. Iran's behavior is viewed as "unpredictable, dangerous, and not constrained by traditional forms of military deterrence, diplomacy, or arms control."[10] Not only has Iran threatened Israel, but it continues to provide funding and weapons to insurgent terrorist groups (including missiles) and seems intent on developing a nuclear weapons capability. Also, Iran has shown prodigious ability to advance its missile systems. Uzi Rubin, former head of Israel's Defense Organization, notes that in four months, Iran "demonstrated a mastery of three different rocket propulsion techniques (liquid, liquid storable, large diameter solid), three different thrust rectoring technologies (graphite, jet vanes, tungsten jet), two systems of stage operation, and one embryonic multiple warhead nose fairing."[11] With its successful launch of Safir, Iran joins eight countries with an indigenous space-launch capability—a technology that can lead to intermediate-range ballistic missile (IRBM) and ICBM development. Finally, the progress of Iran's missile program cannot be viewed in a vacuum. Iran has received substantial outside assistance.[12] North Korea's 2009 launch of Unha-2 is, therefore, particularly troubling. Although the third stage failed, Massachusetts Institute of Technology Professor Theodore Postol acknowledges that if the first two-stages were made available, Iran could deliver payloads of 2,000 kg approximately 5-6,000 km (capable of reaching most of western and northern Europe).[13] For these three reasons, advocates of missile defense argue that the United States must begin construction on the European site immediately.

But how imminent is the threat? Iran's missile systems are based on foreign designs and components. Iran has not demonstrated an ability to produce liquid-propellant rocket motors indigenously. Besides the obvious difficulties inherent in reverse engineering, Iran's missiles utilize SCUD technologies, which are notably difficult to upgrade in both range and payload. These challenges are augmented by a weak infrastructure, insufficient access to the high-tech materials market, and a deficient research and development foundation, industrial base, and labor force. To develop an IRBM or ICBM capable of threatening all of Europe or the United States, Iran would have to achieve substantial breakthroughs in rocket motor, flight control guidance system, reentry vehicle heat production, and testing technologies.[14] Conservative U.S. intelligence estimates suggest that Iran could have this capability by 2015.[15] If Iran were to utilize its current technology to produce an IRBM/ICBM, the missile would likely be bulky, unwieldy, and vulnerable to preemptive attack.[16] As stated above, external assistance, especially North Korean sale of Unha-2 technology or perhaps know-how from other foreign sources, would change this calculation.

The potential for Iran to gain longer-range capabilities cannot be ignored. This raises the second question: How likely is it that the threat will be realized? Putting aside current and future capability, what is Iran's intent? Given the massive retaliation that would be justified by either an attack on Europe or the United States, would Iran attack the United States, its forward-deployed troops, or its allies directly? Iran certainly directs its deterrence against the United States, and as such, its power projections in the Middle East spar with U.S. interests. Yet Iran's menacing behavior is anything but suicidal. Instead, it can be analyzed as a strategy to maintain the regime and project power regionally. The recent presidential elections in Iran demonstrate the regime's focus on maintaining internal control. Internationally, it seeks to widen its influence and achieve regional hegemony through attempts at undermining other states' influence in the region, including by supporting political and armed resistance groups such as Hizbollah and Hamas. Iran and its allies seek to gain and project political power and use small-scale violence to do it, but Iran's preference not to engage its enemies directly is an important strategic calculation aimed at protecting its regime from massive retaliation and intervention. These Iranian allies also operate as a form of extended deterrent against the United States and Israel. Iran's ballistic missiles fit into a strategy of regime protection through retaliatory deterrence of overt, large-scale aggression. It seems unlikely that Iran would be unaffected by U.S. deterrence and act in a manner detrimental to its survival.[17]

If Iranian leaders did decide to attack the United States, its forward-deployed troops, or U.S. allies with missiles, how effective would the European missile defense installations have been? The defenses proposed for Poland and the Czech Republic would cover northern and western Europe, even though Iran's current capabilities only threaten southeastern Europe and U.S. interests in the Middle East. If Iran succeeded in gaining longer-range capabilities and launched a strike against the United States and its allies and interests, it would almost certainly launch more than one or two missiles. Poland was slated to house ten interceptors. The MDA stated that up to five interceptors would be launched at each target to increase the probability of a successful hit. If Iran develops more than two long-range missiles, the European site would have been overwhelmed (unless, of course, the United States upgraded the site). Given the repercussions of an attack, and the relative ease of producing missiles after the first assembly, it seems unlikely that Iran would fire such a limited number of missiles. Finally, the distance between the proposed x-band European mid-course radar (EMR) in the Czech Republic and projected Iranian launch sites is approximately 3000-3500 kilometers. This distance could allow Iran to orient the warheads to decrease radar facility. Postol surmises that to "beat" missile defense, Iran could launch its warheads towards the EMR "nose-on,"[18] thereby reducing the cross section of the warhead detectable by the radar and making it much more difficult (if not impossible) for the EMR to discriminate the target with the current number of T/R modules (16,896).[19]

While Iran's missile capability is growing, the extent, timeframe, and intent of this growth are not certain. Iran must achieve significant technological breakthroughs in a number of fields and gain access to parts not currently available to it on the international market. It can (and it appears it would have to) seek substantial external assistance. Given the Iranian regime's clear desire to maintain power, it is unlikely that leaders would put their regime in jeopardy by launching a missile attack against the United States or U.S. interests. If Iran does engage in such risky behavior, it is unclear whether the missile defense components planned for Poland and the Czech Republic would have been able to provide reliable security. They could not have covered U.S. interests in the Middle East or southern Europe, and, it seems likely that Iran could overwhelm or outmaneuver the third site.

Technical Feasibility

To determine the technological feasibility of the now shelved U.S. missile defenses in Eastern Europe, it is necessary to explore the system's operation first. The stated aim of the European system was "to provide a defense of Europe against a limited intermediate and long-range ballistic missile attack from the Middle East and provide additional capability to the current missile defense system located in Alaska and California to defend the United States."[20] To achieve this, the Bush administration plans called for an EMR to be deployed to the Brdy military zone in the Czech Republic, a forward-based x-band radar (FBX) to be stationed in southern Europe (possibly Turkey or Azerbaijan), and ground-based interceptors to be siloed at a former Polish air base in Redzikowo, Poland. The system would be supplemented by U.S. early warning satellites (the U.S. Air Force's Space-Based Infrared System [SBIRS] and MDA's Space Tracking and Surveillance System [STSS]), an early warning radar (UHF) based at Fylingdales Air Base in the UK, and possibly U.S. radar GLOBUS II in Vardo, Norway, and UHF radars in Thule, Greenland, Cape Cod, Massachusetts, and Grand Forks, North Dakota.[21]

A chain of actions would initiate with U.S. early warning satellites detecting the hot exhaust plume emanating from a missile's rocket motor. This information would be relayed to the FBX—an air transportable, phased-array x-band radar. The FBX would track the missile with greater precision, but because it cannot discriminate targets from decoys, and then the FBX would feed tracking information to the EMR—a large, fixed site phased-array radar with an antenna diameter of 12.5 meters. The EMR's antenna is covered in transmit/receive (T/R) modules that enable collection of high resolution data necessary to perform important discrimination functions. Unlike the FBX though, the EMR is not capable of scanning large swaths of sky. The EMR would continue to analyze the target for details, while the Fylingdales UHF radar would begin to track the missile to gather more accurate cuing information. The Fylingdales radar is a large, phased-array radar with a higher and larger antenna than either the EMR or FBX radar. As a result, it is able to search large areas of sky for possible targets at a range of 3000 km. The

UHF's tracking information would be fed back to the EMR. When the EMR identifies the targets, the interceptors in Poland would be fired. The ground-based interceptors are infrared-homing kill vehicles accelerated by a two-stage rocket derived from U.S. Minuteman II ICBM technology. The EMR would relay positioning information to the kill vehicle, which would use its infrared capabilities to discriminate, on a one-to-one basis, between warheads and decoys. This information would be used to make precision adjustments to the kill vehicle's trajectory to better enable it to home in on, and destroy, the target by direct high-speed collision.[22]

Is this scenario possible? Advocates for the third site acknowledge that the missile defense system of today is not prepared for engagement. However, they contend that system testing has been successful. Heritage Foundation scholars Sally McNamara, Baker Spring, and Peter Brookes argue that roughly 80 percent of recent tests across all four missile defense programs (GMD, SM-3, THAAD, and PAC-3) have succeeded.[23] With continued robust funding and a national security priority, missile defense could prove to be a reliable defensive system in the near term, not to mention the obvious long-term security benefits of an effective system. Proponents contend that continued missile defense testing should occur simultaneously with construction of the third site.

Given the strategic repercussions of missile defense, however, more careful investigation of the program's technological capability is in order, particularly those systems proposed for Eastern Europe. To date, there have been fourteen ground missile defense flight intercept tests, with only 50 percent of those tests fulfilling the mission goal. In Congressional testimony, the longest-serving director of the Department of Defense's (DOD) Operational Test and Evaluation, Philip Coyle, emphasized that in the past five years, there have only been six intercept tests, four of which have failed to achieve the main goal of the test—a success rate of 33 percent.[24] Of those six tests, none reflected a realistic environment. None of the tests included decoys, countermeasures, or potential battlefield conditions that would stress the missile defense system. In fact, in the history of missile defense testing, only five early flight intercept tests included decoys (although these decoys were round, not cone-shaped balloons). Tests with a tumbling re-entry vehicle, sophisticated decoys or countermeasures, multiple targets, high-speed engagement, required steering of the kill vehicle, or in less than ideal weather or battle conditions have never occurred.[25] In addition, numerous components of the proposed third site have not been built. The U.S. early warning satellite systems (SBIRS, STSS) are still under development. Both are reported to be over budget and behind schedule. The two-stage interceptor, to have been housed in Poland, has not been created.[26]

These development and testing concerns would be mitigated if improvement required for the system to remain effective would be measurably less expensive than offensive measures to frustrate the system. Yet despite the advanced technology required to field an effective missile defense, the

technology required to thwart such a system is relatively simple. A number of countermeasures can be deployed to frustrate missile defenses' targeting and discrimination functions. For example, lightweight balloons of different shapes, sizes, exterior coatings, and heat can be used to confuse discrimination functions. Cooled shrouds can make the warhead invisible to search functions, low-powered jammers interfere with the noise signal, spin stabilization can decrease a warhead's radar cross section, small wires places on the warhead nose create chaff and reflect the x-band energy needed for detection, and finally, sub-munitions can overwhelm interception functions.[27] The know-how and technological base required for such offensive countermeasures is comparatively unsophisticated and coincides with the progress required to develop longer-range ballistic missiles.[28] Given that it is relatively simple for missile-capable states to develop effective countermeasures, missile defense systems can be expected to lose cost-benefit comparisons against capable opponents.

In sum, the feasibility of the Bush administration's planned U.S. missile defenses in Eastern Europe is unproven. Testing results have been mixed and inadequate. Numerous components of the third site have not been developed. It remains unclear whether missile defenses can ever outmaneuver obstacles because the operational tests have not stressed the system, nor has the ability of missile defenses to perform against realistic threats under realistic battle conditions been demonstrated. While future technological breakthroughs are possible, the unsophisticated countermeasures available to missile-capable states threaten missile defense systems with perpetual infeasibility.

Cost Efficacy

Developing, testing, and fielding complex weapons systems requires substantial funding. The Bush administration estimated the European sites to cost approximately $4 billion through 2015.[29] An August 2009 report by the Government Accountability Office (GAO) suggests that the full cost may be much higher.[30] Proponents of missile defenses argue that regardless of the expected large price tag attached to missile defense, its development is essential to defending the United States. They argue that U.S. adherence to the ABM treaty for thirty years has hindered U.S. missile defense progress at a time when the threat arising from missile attack has risen dramatically due to the proliferation of relevant technologies.[31] Fielding effective missile defenses to protect the United States, its forward-deployed troops, and its allies, should be a primary goal of U.S. security. They contend that devoting 2–3 percent of the annual DOD general budget to the Missile Defense Agency (MDA) is not only a reasonable appropriation given the program's complexity, but a necessary allocation given its fundamental security role.[32]

Certainly, no one can expect missile defense to be inexpensive. However, given financial uncertainties in the United States and the importance of continuing to defend the United States and its allies from attack, security

funding must be allocated stringently to maximize cost-effectiveness and not take away from other pressing security priorities.[33] In May 2009, Secretary of Defense Robert Gates explained cuts in the MDA program budget by stating, "the security of the American people and the efficacy of missile defense are not enhanced by continuing to put money into programs that … are fatally flawed."[34] Funding should "focus the dollars on real yield and on research programs that have some prospect of yielding an operationally sound concept and one that can come to fruition in our lifetime."[35] The Bush administration plan for European installations of a U.S. missile defense shield should be reviewed in this light.

The DOD MDA funds European missile defense installations. Philip Coyle estimates that since 1983, the United States has spent approximately $150 billion on missile defense.[36] As stated above, the European installations are projected to cost upwards of $4 billion through 2015. However, the GAO has been unable to determine missile defense costs for the past six years due to imprecise budgeting within the MDA. This is partly due to the unique acquisition system utilized by the MDA. The GAO has criticized the DOD for creating system requirements that are "too early, too high, and too inflexible."[37] DOD funding procedures typically motivate exaggerating anticipated performance to gain financing, after which weapons systems development programs experience cost overruns, schedule lags, irrelevance, and technological obsolescence.[38] For these reasons, the MDA pursues spiral development—a type of dynamic evolutionary acquisition system otherwise known as capability-based acquisition. Spiral development aims to avoid technological obsolescence by allowing for innovation through quick deployment of an initial limited capability. Systems then incrementally increase capability, taking advantage of technical developments and adapting to changing security environments. This "spiral" development provides a mechanism to incorporate and encourage new ideas during system maturity. It also seeks to reduce the risk of new technologies by requiring a high level of readiness before formal incorporation into the project.[39]

This type of acquisition system may allow for added flexibility and optimal promotion of new technologies; however, missile defense is not an average DOD weapons system program. The GAO estimates that DOD acquisition historically takes more than ten years to develop and field a weapons system.[40] Due to its complex nature, the United States has been acquiring missiles defenses for sixty-three years. Certainly, a program that has coursed six decades requires mechanisms that take advantage of new technologies and adjust to international developments; however, capability-based acquisition is prone to runaway costs, delayed engagement of critical criteria, and deployment of weak systems at (sometimes) high political cost.

Spiral development's lack of defined baseline requirements prevents the MDA or the GAO from being able to accurately gauge budget costs. Programs with the most promise—that is, those programs that are cost-effective on the margins—should be given priority funding within DOD.

Without a final architecture, or incremental baselines, it is impossible to gauge the efficiency of missile defense's $150 billion (or the third site's cost) or cross-compare missile defense with other systems to determine optimal use of critical funds. Second, incremental acquisition allows the MDA to achieve success on supplemental components, while delaying engagement of critical criteria.[41] Funding on a component may be successful and effective, but if the larger system is not functional, the component's financing is inefficient.[42] Finally, spiral development's promotion of quick deployment of limited capability has cost the United States more in political capital than it has gained in security. The nature of the acquisition program promotes the deployment of weak systems with the understanding that they will be upgraded later. In the near term, this has led to increased tensions with Russia, without promising real muscle against Iran. The failure of the MDA to "assess the full costs of the sites,"[43] combined with a lack of clear baselines and imprecise budgets, prevents an accurate assessment of the cost-effectiveness of missile defense, and the European installations in particular.

Political Repercussions

But what if missile defense installations in Poland and the Czech Republic are like St. John's wort? The remedy costs money, and is unproven, but does not have any side effects (besides the cost), so why not try it? It cannot hurt. Exploring how the system's deployment could affect U.S.–Russian relations and the United States' NATO allies helps assess whether Bush-era plans for U.S. missile defenses in Eastern Europe are harmless

Russia

Since President Reagan's launch of the Strategic Defense Initiative in 1983, Moscow has been skeptical of U.S. missile defense initiatives, viewing them as furtive strategies to gain strategic dominance. The United States remains the only state that could devastate Russia in a nuclear attack and survive the consequences. As such, Russian military strategy remains centered around maintaining offensive and defensive balance with the United States. It came as no surprise then that the Kremlin fiercely protested U.S. plans for missile defense installations in Europe.

Russian concerns can be divided into two categories—strategic and technological. On the first, Russia was alarmed by the manner in which the Bush administration decided to pursue missile defense—unilaterally. In Russian defense thinking, missile defense is a key capability whose development can easily upset strategic parity and the foundation for secure relations by initiating the weaponization of space and an offensive and defensive arms race. Accordingly, Moscow expected "consultations, not notifications"[44] on the U.S. decision to pursue European installations of its larger missile defense program. The way the Bush administration decided to move forward with the third site also unnerved the Russian government because it was seen as symptomatic of a larger pattern of U.S. unilateralism.

Since the fall of the Soviet Union, Russia has felt slighted by its former rival. Moscow has accused the United States of marginalization, disregard for Moscow's concerns, and a failure to respect Moscow's regional interests. Russia points to NATO's Operation Allied Forces in Yugoslavia in 1999 as an example of the United States' (and the West's) failure to respect Russia's legitimate regional security concerns and international law. Russia perceived NATO action as bypassing the United Nations Security Council and violating the Founding Act of the U.S.–Russia Council. It underscored Russia's weakness, reinforced a perception in Moscow that "might makes right," and substantiated a "deep mistrust of the 'double standards' of the western powers in enforcing their normative agenda."[45] This distrust also stems from NATO's decision to expand eastward. The decision to incorporate former Soviet states and satellites into NATO, in two separate expansion rounds, severely damaged U.S.–Russian relations and reinforced a deep distrust among the Russian elite of U.S. policies and interests in the region. The unilateral decision to base U.S. missile defense installations (already a highly controversial program) in Poland and the Czech Republic, regardless of the intercept threat those installations pose, is viewed as an attempt to cement the U.S. presence in the region.

Certainly, the United States should not accept Moscow's claims to spheres of influence; however, it should acknowledge Russia's regional concerns. Russia is the largest and most powerful state in the region. It shares land borders with fourteen states (eight to the west) and provides significant energy exports and trade to Europe (the European Union's largest gas exporter, and third largest trading partner).[46] Regardless of whether or not its concerns or motivations are legitimate, the United States does not benefit from ignoring Russian anxieties. Instead, estranging Russia could lead to an increase in the number of missiles aimed at Europe and a dangerous escalation of tensions.[47]

Russia has three main technical concerns with the Bush administration's proposed third site installations. First, Russia believes that interceptors based in Poland could target Russia ICBMs launched west of the Ural Mountains. The MDA denies this ability, calculating a 6.3-7.5 km/sec burnout speed for U.S. interceptors in Poland.[48] At such a rate, these interceptors would be unable to overtake Russian ICBMs. American analysts George Lewis and Theodore Postol disagree. Drawing on MDA claims about the system's ability to defend Hokkaido, Japan from an Iranian attack, Lewis and Postol estimate that the MDA posits that the interceptor speed is around 9 km/sec. They add that the MDA overestimates the Russian ICBM speed by 15 percent and the lag time between target and interceptor launch. Using this data, Lewis and Postol calculated that interceptors launched from Poland could catch Russian ICBMs.[49] Lewis' and Postol's claims have been verified by numerous reputed physicists, including Pavel Podvig, Richard Garwin, Philip Coyle, and David Wright.[50] The MDA countered Postol and Lewis' claims as "overly optimistic," "hypothetical," and not "derived from actual hardware and software performance."[51] Yet, if Postol's and Lewis' analysis is based on claims MDA makes in arguing for the system's value in defending Japan,

MDA would now appear to be wanting to have it both ways.[52] In any case, if some missile defense experts in the United States conclude the interceptors could catch Russian ICBMs, it is certain that a similar debate is occurring within Russia. Second, Russia is similarly worried about the capabilities of the EMR previously planned for deployment to the Czech Republic. Due to its location, the EMR radar is purported to have a substantially larger cross section of Russian missiles launched from the east than it would have of Iranian missiles launched from the south.[53] Third, and most pertinent, Russia is gravely concerned about the upgrade potential for such a missile defense system. The Kremlin acknowledges that ten interceptors do not pose a serious threat to Russia's strategic deterrent. Russian Deputy Prime Minister Sergey Ivanov explains that the real threat is that "the potential U.S. missile defense European site is not just a dozen anti-ballistic missiles and a radar. It is part of the U.S. strategic infrastructure aimed at deterring Russia's nuclear missile potential."[54] Russia views the system as part of a global architecture to be expanded upon. Russian analysts point to NSPD-23, which states that [European sites] will be developed "as a starting point for fielding improved and expanded missile defenses later"[55] as evidence of U.S. designs to increase the capability of the system. Russia is well aware that the proposed U.S. missile defense system is inadequate against a future Iranian missile threat. Ten interceptors is hardly a security umbrella. It is clear that to adequately provide for European security more interceptors would be required and the EMR radar in the Czech Republic would have to be upgraded. The EMR has the capacity to hold 300-400,000 second generation T/R modules on its antenna.[56] Such an increased capability would dramatically increase the ability of the EMR to discriminate Iranian warheads and would radically amplify its ability to discriminate Russian ICBMs.[57]

These concerns have had serious repercussions on the bilateral U.S.–Russian relationship. The issue of missile defense has soured relations, exacerbated tensions, and undermined trust. Prime Minister Putin has threatened Russian withdrawal from arms control agreements, development of a new generation ICBM, upgraded Russian missile defenses, and forward-basing of nuclear weapons in Belarus as possible responses to U.S. missile defenses in Eastern Europe. Most recently, Russia has sought to use its leverage in Strategic Arms Reduction Treaty (START) follow-on negotiations to push back current U.S. plans for missile defense by emphasizing the link between strategic offensive and defensive capabilities. Any missile defense, even one that has a slim probability of succeeding and does not immediately threaten a state's second-strike capability, increases hypothetical risk that a missile will not hit its target. To guarantee success, Russia will aim additional missiles at critical targets, thus necessitating more missiles/warheads. In the Russian view, strategic offensive cuts are, therefore, increasingly unpalatable in the context of defensive system deployment.[58] It is notable that this logic directly counters the Bush administration's claim that defensive systems stabilize security environments. Unless the system is cooperative and inclusive, it is clear that it will contribute to vertical arms proliferation.

In the months leading up to the July 2009 U.S.–Russia summit on START, Russia sought to underline this logic, threatening to deadlock START negotiations that are required to reach agreement by the end of 2009 to maintain the treaty. At a June 2009 press conference in Amsterdam, Russian President Dmitri Medvedev "emphasize[d] that weapons reductions are possible only if the United States addresses Russian concerns."[59] Special assistant to the president and senior White House director for Russian and Eurasian Affairs, Michael McFaul, responded in turn, defiantly asserting that the United States is "not going to reassure or give or trade … anything with the Russians regarding NATO expansion or missile defense."[60]

In the event, missile defense did not hold hostage a broader agreement on a follow-up START framework. Presidents Obama and Medvedev signed a Joint Understanding agreeing to pursue "further reductions and limitations of their nations' strategic offensive arms"[61] (a cut down to 500-1100 delivery vehicles and 1500-1675 associated warheads). The Joint Statement includes a seeming American compromise; item five, which states that "a provision on the interrelationship of strategic offensive and strategic defensive arms"[62] should be included in the new treaty. According to some arms control experts, this provision would merely state the obvious. However, the inclusion of such a linkage gives President Medvedev substantial breathing room to continue START negotiations in a constructive manner. Missile defense has become a boon to many Russian politicians, who utilize a tough line against the U.S. third site to boost their own popularity. Medvedev also benefits domestically from such tough talk, although the potential threat that Moscow believes the U.S. missile defense poses should not be ignored. However, engaging in bilateral arms control negotiations with the United States boosts Moscow's international status and strategic importance. For this reason, the Kremlin in particular seems poised to walk a narrow line between pushing for compromise on missile defense, without pushing hard enough to cause START's expiration without a follow-on agreement. This approach could change in the next round of START negotiations. Even though the Obama administration has reconfigured U.S. plans for European missile defense, Russia is likely to insist on a formalized agreement on general missile defense as part of new START negotiations.

Medvedev's restraint also provided Obama with breathing room. Unlike his predecessor, President Obama has not aggressively pursued the third-site installations and did not provide additional funding for construction of the European sites in the FY2010 defense budget.[63] It is not in the interest of the United States to push an unproven system at the expense of a broader strategic relationship with Russia, especially considering Russia's needed cooperation in solving global challenges in Iran and Afghanistan, not to mention Russia's ability to vex regional security in Europe, perhaps more than a future Iranian threat can. By attaching preconditions to the European missile defense project and placing it under review, President Obama created the opportunity for technical/political liabilities to halt the construction of the third site. These liabilities were not artificial constructs preset to validate the administration's

position. The review, and subsequent decision not to deploy components to Poland and the Czech Republic, received unanimous support among U.S. Secretary of Defense Robert Gates and the Joint Chiefs of Staff. The administration emphasized adamantly that its decision to reconfigure European missiles defenses has little to do with Russia, and in fact, provides a better capability against a potential Iran missile threat. Opponents who accuse the Obama administration of kowtowing to Moscow and naively hoping for increased Russian pressure on Iran, notably tougher sanctions,[64] misrepresent the administration's decision to the detriment of Poland and the Czech Republic.[65] The Bush administration missile defense plans were a disservice to Poland and the Czech Republic by making both states more vulnerable to Russian coercion, while failing to provide either state with usable capabilities against a resurgent Russia.

NATO

Since 1949, NATO has been vital to transatlantic security. Created to counter the Soviet Union and Warsaw Pact, the subsequent dissolution of both has challenged NATO to redefine its purpose. Although loss of a common enemy and clearly defined raison d'être has highlighted divergence among member states, NATO has not perished, as historically has been the case with alliances whose adversaries have been transformed.[66] Indeed, NATO's intervention in Bosnia and Herzegovina, Serbia, and Macedonia in the 1990s can be viewed as evidence that "the alliance is operationally effective when truly challenged, even if the response is belated, divisive and controversial."[67]

The current missile defense debate highlights two trends that undermine NATO. The first was the Bush administration's discounting of multilateralism, including the continued relevance of NATO. The resulting preference for bilateral or unilateral decisions diminished NATO's role linking European–Atlantic security and underlined the declining relevance of the European theater in U.S. defense policy. The Obama administration's clear preference for multilateralism has the potential to reverse this. However, the Bush administration's bilateral missile defense agreements with Poland and the Czech Republic will continue to haunt the Alliance because they betray a second trend—a lack of confidence among newer member states of NATO's collective security guarantees, specifically Article V commitments.

Promises of collective defense were chief among Eastern European states' reasons for joining NATO. Unfortunately, the threat perception among these newer member states, specifically the fear of Russian coercion, differs dramatically from the assessments of older NATO members. Combined with NATO's refusal to grant Turkey's request for early warning systems and Patriot missiles in 1991 and 2003 as protection against Iraqi threats, Eastern European member states have become increasingly doubtful of NATO's guarantees. As the value of NATO decreases in the security calculations of these newer states, they turn to the United States, and bilateral security agreements, as more credible assurances.

Poland and the Czech Republic, in particular, have historical motivations for heightened security anxieties. Polish territory has been stuck in a tug of war between great powers. Poland lost territorial sovereignty during the partitions of the late 1700s, again to Nazi Germany in 1939, and most recently to the Soviet Union in 1944. The Czech Republic, too, has been prey to Europe's power struggles. Only twenty years after gaining independence as Czechoslovakia (following the fall of the Austro-Hungarian Empire in 1918), Czech lands were signed away to Nazi Germany in the Munich Pact. A mere three years after liberation in 1945, the Communists succeeded in a coup d'état. The Soviet Union and Warsaw Pact members invaded in 1968. These occurrences fostered a deep mistrust of the credibility of their European counterparts' pledges of solidarity. Polish foreign policy expert Lukasz Kulesa explains, "Europe is seen mainly through the history of its appeasement of Hitler, indifference towards Stalin and abandonment of Poland in 1939."[68] From the viewpoint of Eastern Europe, Western Europe "gave priority to dialogue with the Soviet Union rather than to solidarity with East and Central European nations."[69] Thus, confronted with a vague Article V, a past of perceived betrayal, and a current atmosphere of marked discord, Eastern European NATO states are increasingly looking to the United States for security guarantees. Hosting the missile defense sites provided both the Czech Republic and Poland an unrivaled opportunity for close relations with Washington. Poland's Foreign Minister, Radoslaw Sikorski, expressed this sentiment in November 2008 when he explained, "Everyone agrees that countries that have U.S. soldiers on their territory do not get invaded."[70]

Hosting U.S. missile defense components remains unpopular in both states, however. Commonly expressed concerns include an increased risk of first strike, heightened tension with Russia, and possible encouragement of U.S. preemption. Approximately seventy-two percent of Czech citizens are against the missile defense site.[71] The Czech Senate ratified the agreement in November 2008, but it is unclear if the agreement would have passed the Chamber of Deputies. The current interim government of Jan Fischer, in power until October 2009, has stated that the agreement would not have been placed on the parliamentary agenda.[72] As of February 2008, 53 percent of Poles were against the missile defense shield.[73] While Polish officials have been insisting that Washington follow through with the interceptor deployment, there are indications that Poland would welcome stronger defense connections in exchange for canceling the missile defense interceptors. Associate Press journalist Robert Burns summarized Foreign Minister Sikorski as saying, "Poland expects the United States to carry through with the general promises of stronger military cooperation, even if the missile defense base doesn't work out."[74] And in a separate remark Sikorski argued, "Poland needs the concrete physical presence of the alliance on its territory."[75]

Sikorski is right to reframe the issue within NATO. NATO *did* endorse U.S. missile defense plans, but the U.S. pursuit of the Bush administration's missile defense system does not solve or even address the major political-

security problems of NATO allies, including Poland. Instead, it is doubt about NATO's credibility that undermines the alliance and breeds insecurity among its members. NATO members need renewed confidence that they have relevant security guarantees, but missile defense is likely marginal, at best, for this purpose.

Moving Forward

The Obama administration was right to evaluate planned missile defense deployments against tough standards of feasibility, affordability, and desirability. Its decision to reconfigure European missile defenses to meet a short- and medium-range Iranian missile threat demonstrates a commitment to European defenses, not an abandonment of its allies. If the Iranian long-range missile threat grows and the technical feasibility of intercepting Iranian missiles from Eastern Europe is deemed desirable, Russia should remain open to the cooperative opportunities it first presented to the United States under the Bush administration.

The Obama administration should continue to explore the Russian offers currently on the table. The first was presented in June 2007 in Heiligendamm, Germany by then-President Vladimir Putin. Alongside the G8 Summit, Putin proposed granting the United States access to information gathered from the Russian-leased Gabala radar station in Azerbaijan.[76] He also revealed that Russia would not object to interceptors being placed in Iraq, Turkey, or on U.S. naval vessels if Iran gained IRBM or ICBM capabilities.[77] While welcoming of Russian engagement, initial reaction in the United States was skeptical of the benefits of the Gabala site. The Russian radar would only be able provide early warning and would not be capable of performing the functions of the EMR.[78]

These objectives were taken into account in the second proposal, offered in July 2007 during Putin's Kennebunkport, Maine visit. There he augmented his earlier proposal with an offer to use an additional radar in Armavir, upgrade the Gabala radar, and reengage negotiations towards Joint Data Exchange Centers (JDEC) in Moscow and Brussels tasked with assessing missile threats and establishing a pan-European missile defense architecture overseen by the NATO–Russia Council.[79] This proposal is worthy of consideration. The Russian radars would be substantially closer to Iranian targets, thus increasing the radar signal and line of sight. Augmenting these radars with interceptors located in a more southern position than Poland would remove many of Moscow's concerns, while potentially bettering the interceptor's position vis-à-vis Iranian missiles.[80] Lieutenant General Patrick O'Reilly, director of the MDA, has remarked that the Russian radars "would provide helpful early-warning detection in the case of an Iran ballistic missile attack," and "would significantly help our development of our missile defenses."[81]

Besides the technical advantages such cooperation could provide (although it can still be questioned whether missile defense will ever be cost-effective at the margins), a joint effort with the Russian Federation would provide three major political benefits. First, a joint shield would aid in the deterrence of Iran. U.S. Deputy Secretary of Defense William J. Lynn III argues that "a U.S.–Russian collaboration would have an additional benefit of a diplomatic signaling to the Iranians that this is an unacceptable course for them to pursue and that they will face a concerted international front should they proceed down that path."[82] U.S. Vice Chairman of the Joint Chiefs of Staff General James E. Cartwright agrees that "probably the greatest leverage is the partnership and the message that would send. That would be very powerful."[83] Moreover, by including Russia in a European missile shield, an Iranian attack would not only be against the United States and Europe, but against the Russian Federation as well.[84] Certainly, attacking the two states that hold 95 percent of the world's nuclear weapons (not to mention the combined conventional arsenals of the United States, NATO, and Russia) would be a tremendous deterrent to Iranian military planners. Such an attack, and the retaliatory measures it would evoke, would undoubtedly threaten their regime's survival.

Second, engaging Russia on joint missile defense has the potential to improve U.S.–Russian bilateral relations. The facilitated exchange of information necessary to embark on such negotiations would undoubtedly improve confidence and increase transparency. Third, incorporating Russia into the European security structure has the potential to reduce regional tensions by creating a forum for Russia to interact constructively with its Eastern European neighbors.

If Russia views missile defense as such an important strategic capability, is it possible to achieve genuine cooperation? Certainly, cooperative efforts have failed in the past. But for all missed opportunities, thwarted collaborations, and stalled negotiations, there is a record of successful agreements. Indeed, the ability of the United States and Russia to agree to weapons reductions during the height of the Cold War is a testament to this. Cooperation on sensitive matters of international security deepened after September 11, 2001. Following a series of joint statements, the United States and Russia embarked on an ambitious effort to embolden the NATO–Russia Council, tasking it to explore areas of cooperation on missile defense and continue JDEC negotiations. Upon completion of a series of joint exercises, chairman of NATO military command, General Ray Henault, and Russian Major General Segei Yagolnikov remarked that "Russia and NATO forces have proven that they can fight and protect jointly territory and populations against missile attacks wherever they wish to do so, based on the jointly agreed procedures and rules of engagement."[85]

Certainly, there were hurdles that prevented further progress, among them the U.S. decision to pursue missile defense deployment to Poland and the Czech Republic. However, there were more systemic challenges that promise to vex

any current or future effort to develop joint missile defenses. For example, a joint shield would most likely require a combined early warning system, in addition to overcoming legal, tax, and bureaucratic issues. Substantial top-level engagement is critical. It is unclear such a push would materialize on the Russian side. The "old guard" is skeptical of any joint efforts with the United States. There is indication that a growing number of younger Russian elites favor such collaboration and recognize the substantial security and prestige such an endeavor could bestow upon Russia. As remarked upon by Major General Vladimir Dvorkin, "what's new is a desire and determination for cooperation on many issues."[86] Although it is uncertain which group will prevail domestically, it is in Obama's interest to seek to engage the younger cohort and to support them as much as possible. Russian ambassador to NATO, Dmitry Rogozin, commented that the U.S. decision to reconfigure European missile defenses "means [that] we're getting rid of one of those niggling problems which prevented us from doing the real work."[87] Russia should ensure that substantive progress is achieved. If strategic relations do not improve, the perception that Moscow's concerns are red herrings will increase, and the willingness of the United States to respect those concerns will diminish.

There are analysts who argue that the U.S. failure to follow through on missile defense deployment gives Russia a veto over the affairs of Eastern Europe. Lukasz Kulesa presents this view most eloquently:

> The idea that Russia needs to be persuaded to agree to the missile defense bases in Europe can only be justified as either the legacy of treating Central and Eastern Europe as the traditional Russian sphere of influence or as the sign of strength of the belief that the West should refrain from taking steps which could 'irritate' Moscow. But those who appeal for showing understanding for Russian fears and sensibilities seem to forget that we are no longer dealing with a Yeltsin-era fragile state, but with a powerful country with global aspirations. Russia should not be treated like a spoiled child, used to drawing everyone's attention with loud screams. Inviting Russia to co-decide on missile defense would be a disturbing precedent of allowing a third party to have voting rights on the issue which is firmly within the sovereign realm of the two countries involved.[88]

However, following through with Bush-era missile defense plans would have been a worse disservice to Poland and the Czech Republic. Security moves with uncertain motives and advantages that heighten overall regional tensions benefit no one. Instead, if missile defense installations in Poland and the Czech Republic make sense in the future on the grounds of threat, technical feasibility, and cost, the United States should explore the conditions under which Poland and the Czech Republic would agree to joint U.S.–Russian efforts on their respective territories. Poland and the Czech Republic would be highly sensitive to a Russian presence on their soil, and these feelings should not be disregarded. However complicated, a joint missile defense project with

Russia could increase transparency and confidence and contribute to substantial security gains for both Poland and the Czech Republic.

In the meantime, NATO should recognize the insecurities of its newest members and reassure them through joint exercises, contingency scenarios, and a general increase of alliance presence. NATO's continued relevance requires clarification of Article V. A security alliance cannot survive with members uncertain of what they are committed to "give" their allies, and what they can count on getting in return. Older members seem particularly reluctant to define Article V and argue that broadening Article V's meaning to include relevant twenty-first century challenges (energy security, cyber threats, secessionist movements) threatens to render the clause hollow. This sentiment only adds to the perception that they are unwilling to come to the aid of fellow member states. NATO member states must have a conversation about threat assessment and must determine the appropriate level of response and support NATO can and should give.

Poland and the Czech Republic should work with NATO and the United States to identify realistic threats and suitable proportionate means to deter or deflect them. To the extent that threats such as energy supply disruption, cyber-attack, penetration by criminal networks, and so forth are rising in probability, NATO should focus increasing attention and resources on them. The salience of ballistic missile threats, and correspondingly, ballistic missile defense in the NATO agenda should be weighed carefully against the full range of threats posed. Poland and the Czech Republic should press for reassurances that promise to protect their interests like stronger military cooperation, intelligence sharing, and data exchange, in addition to defensive systems that address their threats (both in type and scope).

Writing in the Polish daily, *Gazeta Wyborcza*, on August 31, 2009, Russian Prime Minister Vladimir Putin reflected on the seventieth anniversary of the Nazi invasion of Poland, and argued that the pre-World War II period "provides strong evidence that it is impossible to set up an efficient system of collective security without involvement of all countries of the continent, including Russia." In addition, he declared it an "obligation to do everything in order to make Polish–Russian relations free from the burden of mistrust and prepossession."[89] Poles are skeptical of Russia's sincerity. Pavel Felgenhauser, a journalist with *Novaya Gazeta*, remarks, "this is all part of an old Russian game. Putin wants to portray himself to the West as a liberal who's surrounded by wolves back in Moscow, but it's really business as usual."[90] It doesn't have to be, though. The Obama administration has the opportunity to transform U.S. missile defense plans into a platform for exploring the conditions required for cooperative European security. A joint missile defense effort offers the opportunity for constructive engagement of Russia, a resetting of Eastern European regional relationships, a reinforcement of NATO guarantees, and a deterrent against an Iranian missile threat. Realizing these prospects will be difficult, but continued high-level engagement by the

United States could create the impetus, conditions, and assurances necessary for concrete and transparent security gains.

Notes

[1] Joseph Biden, "New Era of Cooperation," (speech, 45th Annual Munich Conference on Security Policy, Munich, Germany, February 7, 2009) in Real Clear Politics, http://www.realclearpolitics.com/articles/2009/02/a_new_era_of_cooperation.html (accessed July 22, 2009).
[2] Ibid.
[3] Lawrence Kaplan, "Missile Defense: The First Sixty Years," U.S. Department of Defense Missile Defense Agency, August 15, 2008, http://www.mda.mil/mdaLink/pdf/first60.pdf (accessed May 12, 2009).
[4] For a longer discussion on the stabilization potential of defensive systems, please read Sally McNamara et. al., "Missile Defense: Debunking Arguments Against the Third Site in Eastern Europe," Heritage Foundation, November 6, 2007, http://www.heritage.org/research/europe/wm1694.cfm (accessed May 12, 2009). Interestingly, President Lyndon Johnson and then-Secretary of Defense Robert McNamara professed the opposite logic at the Glassboro Summit on June 23, 1967. The Johnson administration asserted that Soviet missile defenses would prompt the United States to add more nuclear warheads to its arsenal to overwhelm the system. See "Chronology of National Missile Defense Programs," Council on Foreign Relations, June 1, 2002, http://www.cfr.org/publication/10443 (accessed July 20, 2009).
[5] It is important to note that the administration began discussions with the Czech Republic and Poland much earlier, mostly likely in the summer of 2001.
[6] For a complete discussion of the questions surrounding Iran's nuclear program, see Kenneth Katzman, *Iran: U.S. Concerns and Policy Responses*, prepared by the Congressional Research Service, August 6, 2009, available on http://fas.org/sgp/crs/mideast/RL32048.pdf (accessed August 11, 2009).
[7] The information on Iran's liquid-propellant systems is from Theodore Postol, "Technical Assessment of Iran's Ballistic Missile Program," technical addendum to the *Joint Threat Assessment on Iran's Nuclear and Missile Potential*, (New York, NY: East West Institute, 2009), http://docs.ewi.info/JTA_TA_Program.pdf (accessed May 18, 2009).
[8] Reuters, "Iran has missiles that put Europe in range: report," *Boston Globe*, April 27, 2006, http://www.boston.com/news/world/middleeast/articles/2006/04/27/iran_has_missiles_that_put_europe_in_range_report/?p1=MEWell_Pos4 (accessed May 23, 2009).
[9] The information on Iran's liquid-propellant systems is from Theodore Postol, "Technical Assessment of Iran's Ballistic Missile Program," technical addendum to the *Joint Threat Assessment on Iran's Nuclear and Missile Potential*, (New York, NY: East West Institute, 2009), http://docs.ewi.info/JTA_TA_Program.pdf (accessed May 18, 2009). For information on Iran's solid fuel capabilities, see Kenneth Katzman, "Iran: U.S. Concerns and Policy Responses," prepared by the Congressional Research Service, August 6, 2009, available at http://fas.org/sgp/crs/mideast/RL32048.pdf (accessed August 11, 2009). For a technical analysis of the Sejjil missile, see Theodore Postol, "The Sejjil Ballistic Missile," technical addendum to the *Joint Assessment on Iran's Nuclear and Missile Potential,* (New York, NY: East West Institute, 2009), http://docs.ewi.info/JTA_TA_Sejjil.pdf (accessed August 30, 2009). Iran has also procured anti-ship cruise missiles from China and Kh-55 cruise missiles from Ukraine. The Kh-55 cruise missiles are air-launched, nuclear-capable, with an approximate range of 3,000 km. Notably, U.S. missile defense plans in Eastern Europe engage only ballistic missiles and are not capable of addressing cruise missile attacks. Please see "Cruise missile row rocks Ukraine," BBC, March 18, 2005, http://news.bbc.co.uk/2/hi/europe/4361505.stm (accessed June 12, 2009).
[10] Steven A. Hildreth and Carl Elk, *Long-Range Ballistic Missile Defense in Europe,* reported prepared by Congressional Research Service, June 22, 2007, available on https://www.policyarchive.org/bitstream/handle/10207/19927/RL34051_20070622.pdf?sequence=2 (accessed June 13, 2009).
[11] Uzi Rubin, "Yes, We Should Worry About Iran's Satellite," *Wall Street Journal*, February 21, 2009, http://online.wsj.com/article/SB123517621950437485.html#printMode (accessed February 21, 2009). For a longer argument, please see David Montague et. al., "Iran's

Ballistic Missile Potential,"
http://www.ewi.info/system/files/IransBallisticMissilePotential.pdf (accessed August 30, 2009).
[12] For a fuller discussion on North Korea's missile program, please see Steven A. Hildreth, *North Korean Missile Threat to the United States*, report prepared by Congressional Research Service, February 24, 2009, http://assets.opencrs.com/rpts/RS21473_20090224.pdf.
[13] Please note that Theodore Postol is not an advocate for missile defenses; however, his technical analysis of the Unha-2 launch is preeminent. Theodore Postol, "Technical Assessment of Iran's Ballistic Missile Program," technical addendum to the *Joint Threat Assessment on Iran's Nuclear and Missile Potential*, (New York, NY: East West Institute, 2009), http://docs.ewi.info/JTA_TA_Program.pdf (accessed May 18, 2009). Also see, David Wright and Theodore A. Postol, "A Post-launch Examination of the Unha-2," *Bulletin of the Atomic Scientists,* June 29, 2009, http://www.thebulletin.org/web-edition/features/post-launch-examination-of-the-unha-2 (accessed June 30, 2009).
[14] *Joint Threat Assessment on Iran's Nuclear and Missile Potential* (New York, NY: East West Institute, 2009): 9, 3.22, http://docs.ewi.info/JTA.pdf (accessed May 18, 2009).
[15] *Ballistic and Cruise Missile Threat* (Dayton, OH: National Air and Space Intelligence Center, Wright-Patterson Air Force Base, 2009)
http://www.fas.org/irp/threat/missile/naic/NASIC2009.pdf (accessed May 20, 2009).
[16] Theodore Postol, "Technical Assessment of Iran's Ballistic Missile Program," technical addendum to *the Joint Threat Assessment on Iran's Nuclear and Missile Potential*, (New York: East West Institute, 2009), http://docs.ewi.info/JTA_TA_Program.pdf (accessed May 18, 2009).
[17] Former U.S. deputy director of National Intelligence, Thomas Fingar, recently voiced support for this view, stating, "I don't think this is a suicidal regime. I don't dismiss out of hand at all the idea that they could be deterred." Mike Shuster, "Could Deterrence Counter a Nuclear Iran?" *National Public Radio,* August 25, 2009,
http://www.ewi.info/system/files/IransBallisticMissilePotential.pdf (accessed August 25, 2009).
[18] Theodore Postol, "Defense Against Iran's Ballistic Missiles," technical addendum to *the Joint Threat Assessment on Iran's Nuclear and Missile Potential*, (New York, NY: East West Institute, 2009): 8, 4.26 http://docs.ewi.info/JTA_TA_Defense.pdf (accessed May 18, 2009).
[19] Ibid.
[20] "Fact Sheet: European Capability Initiative," U.S. Department of Defense Missile Defense Agency, July 2008,
http://www.militarynewsnetwork.com/publications/missiledefenseeurope2.pdf (accessed June 12, 2009). It is important to note that the priorities of the European site have been stated differently. Many thanks to Phil Coyle for providing the MDA FY-208 budget request, which states that "to ensure full coverage of the United States against threats from the Middle East, we will upgrade an Early Warning Radar in Thule, Greenland. This radar, in conjunction with the radar at Fylingdales, UK provides the ability to track threats to the U.S. and Europe from the Middle East. *Because we must protect these radars or risk losing the "eyes" of our system, we are planning to field ground-based interceptors and an associated ground-based midcourse radar site in Europe.*"[emphasis added]
[21] Theodore Postol, "Defense Against Iran's Ballistic Missiles," technical addendum to the *Joint Threat Assessment on Iran's Nuclear and Missile Potential*, (New York, NY: East West Institute, 2009) http://docs.ewi.info/JTA_TA_Defense.pdf (accessed May 18, 2009).
[22] Many thanks to Theodore Postol for his patient explanation of the step-by-step missile defense process, (Theodore Postol, pers. comm., January 30, 2009). Theodore Postol, "Defense Against Iran's Ballistic Missiles," technical addendum to the *Joint Threat Assessment on Iran's Nuclear and Missile Potential*, (New York, NY: East West Institute, 2009): 8, 4.26, http://docs.ewi.info/JTA_TA_Defense.pdf (accessed May 18, 2009)
and George N. Lewis and Theodore A. Postol, "The European Missile Defense Folly," *Bulletin of the Atomic Scientists* 64:2 (May/June 2008): 32–39,
http://www.thebulletin.org/files/064002009.pdf (accessed March 16, 2009).
[23] Sally McNamara, Baker Spring, and Peter Brookes, "Missile Defense: Debunking Arguments Against the Third Site in Eastern Europe," Heritage Foundation, November 6, 2007, http://www.heritage.org/research/europe/wm1694.cfm (accessed May 12, 2009).

[24] Philip E. Coyle III, "The Future of Missile Defense Testing" (congressional testimony, House Committee on Armed Services, Subcommittee on Strategic Forces, Washington, D.C., February 25, 2009) http://www.cdi.org/pdfs/CoyleHASCfull2_25_091.pdf (accessed May 16, 2009).
[25] Ibid.
[26] Ibid.
[27] George N. Lewis and Theodore A. Postol, "The European Missile Defense Folly," *Bulletin of the Atomic Scientists* 64:2 (May/June 2008): 32-39. http://www.thebulletin.org/files/064002009.pdf (accessed March 16, 2009) and George N. Lewis et. al., "Why National Missile Defense Won't Work," *Scientific American* (August 1999): 36–41.
[28] U.S. Director of National Intelligence, *Foreign Missile Developments and the Ballistic Missile Threat Through 2015,* unclassified summary, September 1999 available from http://www.fas.org/irp/threat/missile/nie99msl.htm (accessed June 14, 2009).
[29] *Ballistic Missile Defense: Actions Needed to Improve Planning and Information on Construction and Support Costs for Proposed European Sites,* prepared by the Government Accountability Office, August 2009, http://www.gao.gov/new.items/d09771.pdf (accessed August 6, 2009).
[30] Ibid.
[31] Baker Spring et. al., "Moving Forward with Ballistic Missile Defense: A Memo to President-elect Obama," Heritage Foundation, December 2, 2008, http://www.heritage.org/research/ballisticmissiledefense/upload/ObamaMemo_1.pdf (accessed March 3, 2009). For a good counterargument on the level of the missile threat, see Joseph Cirincione, "The Declining Missile Threat," (congressional testimony, House Committee on Government Reform, Subcommittee on National Security and Foreign Affairs, Washington, DC, March 5, 2008) http://nationalsecurity.oversight.house.gov/documents/20080305141211.pdf (accessed June 14, 2009).
[32] Baker Spring et. al., "Moving Forward with Ballistic Missile Defense: A Memo to President-elect Obama," Heritage Foundation, December 2, 2008, http://www.heritage.org/research/ballisticmissiledefense/upload/ObamaMemo_1.pdf (accessed March 3, 2009).
[33] Greg Bruno, "Backgrounder, National Missile Defense: A Status Report," Council on Foreign Relations, May 18, 2009, http://www.cfr.org/publication/18792/ (accessed March 12, 2009).
[34] Secretary Robert M. Gates and Admiral Mike Mullen, "FY2010 Budget Request," (congressional testimony, House Armed Services Committee, Washington, D.C., May 13, 2009) http://www.jcs.mil/speech.aspx?ID=1181 (accessed July 12, 2009).
[35] Ibid.
[36] Coyle also notes that in the "next five years, the Pentagon has requested another $62.5 billion for missile defense.…" "If the Congress supports this spending on missile defense, by the end of 2013, over $110 billion will have been spent just since 2003." Philip E. Coyle III, "The Future of Missile Defense Testing" (congressional testimony, House Committee on Armed Services, Subcommittee on Strategic Forces, Washington, D.C., February 25, 2009):25, http://www.cdi.org/pdfs/CoyleHASCfull2_25_091.pdf (accessed May 16, 2009).
[37] Gregory A. Garrett and Rene G. Rendon, *U.S. Military Program Management: Lessons Learned & Best Practices* (Vienna, VA: Management Concepts, 2007): 336.
[38] Mark Montroll et. al., "Capability-Based Acquisition in the Missile Defense Agency" (independent research project presented at the Industrial College of the Armed Forces, National Defense University, Fort McNair, Washington, D.C.): 3, http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA422428&Location=U2&doc=GetTRDoc.pdf (accessed May 20, 2009) and *BEST PRACTICES: Better Management of Technology Development Can Improve Weapon System*
Outcomes, prepared by the Government Accountability Organization, July 1999: 17 http://www.gao.gov/archive/1999/ns99162.pdf (accessed June 13, 2009).
[39] Ibid.
[40] Ibid.

[41] Philip E. Coyle III, "The Future of Missile Defense Testing" (congressional testimony, House Committee on Armed Services, Subcommittee on Strategic Forces, Washington, DC, February 25, 2009): 25, http://www.cdi.org/pdfs/CoyleHASCfull2_25_091.pdf (accessed May 16, 2009).
[42] Ibid.
[43] *Ballistic Missile Defense: Actions Needed to Improve Planning and Information on Construction and Support Costs for Proposed European Sites,* prepared by the Government Accountability Office, August 2009, http://www.gao.gov/new.items/d09771.pdf (accessed August 6, 2009).
[44] Off-the-record meeting with senior Russian delegation on post-START negotiations, Carnegie Endowment for International Peace, Washington, D.C., February 2009.
[45] Derek Averre, "From Pristina to Tskhinvali: The Legacy of Operation Allied Force in Russia's Relations With the West," *International Affairs* 85:3 (2009): 587.
[46] "European Union (27) Trade Profile," World Trade Organization, http://stat.wto.org/CountryProfile/WSDBCountryPFView.aspx?Language=E&Country=E27 (accessed July 20, 2009).
[47] Sebastian Alison and Ellen Pinchuk, "Russia Will Target Czech, Polish Missiles Sites, Ivanov Says," Bloomberg News, June 14, 2007, http://www.bloomberg.com/apps/news?pid=20601087&sid=awVsVjCaEeH0&refer=home (accessed August 2, 2009). and "Russia issues new missile threat," BBC News, July 4, 2007 http://news.bbc.co.uk/2/hi/europe/6269408.stm (accessed August 2, 2009).
[48] Theodore A. Postol and George N. Lewis, *The Proposed US Missile Defense in Europe: Technological Issues Relevant to Policy* (Berlin, Germany: Conference on Promoting Stability in South Asia, October 8, 2007), slides http://web.mit.edu/stgs/pdfs/BerlinPPT/MondaySessionTwo/PostolTalk2_MDAFalseStatements_Berlin_October8,2007.pdf (accessed June 12, 2009).
[49] Benjamin Somers, "Weapons Expert Says Proposed Missile Defense Capable of Intercepting Russian ICBMs," American Association for the Advancement of Science, September 24, 2007, http://www.aaas.org/news/releases/2007/0924missile.shtml (accessed May 20, 2009). and Theodore A. Postol and George N. Lewis, *The Proposed US Missile Defense in Europe: Technological Issues Relevant to Policy* (Berlin, Germany: Conference on Promoting Stability in South Asia, October 8, 2007), slides, http://web.mit.edu/stgs/pdfs/BerlinPPT/MondaySessionTwo/PostolTalk2_MDAFalseStatements_Berlin_October8,2007.pdf (accessed June 12, 2009).
[50] Desmond Butler, "Physicists challenge missile claims," *USA Today*, September 27, 2007, http://www.usatoday.com/news/washington/2007-09-27-missile-defense_N.htm (accessed May 20, 2009).
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