

## Missile defense and the myth of strategic stability

*Pavel Podvig*

Prepared for the workshop on “Stability Issues in a New Nuclear Order,” December 15-16, 2014<sup>1</sup>

Strategic stability is one of the concepts that figure very prominently in the discussion of nuclear arms control and disarmament. It is often assumed that the progress toward nuclear disarmament would be impossible if the specific steps toward this goal do not preserve the existing strategic balance. This is the position taken by all major nuclear powers, who appeal to strategic stability as the main precondition for deep reductions of nuclear arsenals.

Missile defense has always had a special role in the roster of technologies that could disrupt strategic stability. Indeed, it was the attempt to limit missile defenses in the late 1960s-early 1970s that made the most significant contribution to establishing strategic stability as a concept. The ABM treaty that established this limit in 1972, was long regarded as a “cornerstone of strategic stability” and credited with constraining the nuclear arms race. Accordingly, the demise of the treaty, which was terminated in 2002, gave rise to concerns about the future of nuclear disarmament and the possibility of a new arms race. Missile defense remains the most contentious issue in the U.S.-Russian relations and the bilateral nuclear disarmament process—just recently the president of Russia named the U.S. missile defense program “a threat not only to Russia, but to the world as a whole – precisely due to the possible disruption of [the] strategic balance of forces.” China has expressed its concerns about the U.S. missile development as well.

The range of opinions about missile defense is as wide today as it was during the Cold War – while some argue that missile defense undermines strategic stability and threatens to stall the nuclear disarmament process, others see it as a means of addressing emerging security challenges and countering proliferation of ballistic missiles and nuclear weapons. Missile defense has also been discussed in the context of a nuclear weapons free world. Again, some evidence suggests that unless missile defense is restricted nuclear weapon states would not be able to reduce their arsenals below a certain level. On the other hand, some experts believe that missile defense can play a constructive role in eliminating nuclear weapons by providing a mechanism of dealing with proliferators.

However, the link between missile defense, stability, and arms race may not be as strong as the political controversy may make us to believe. The role that missile defense could play in countering missile threats also appears to be overestimated. This essay attempts to look critically at two key concepts that underlie the discussions of missile defense – the relationship between offensive and defensive forces and the ability of missile defense to

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<sup>1</sup> This paper is based in part on the author's paper circulated by the Program on Strategic Stability Evaluation (POSSE) of the Georgia Institute of Technology.

deter or counter a threat of a small-scale missile attack. The author hopes that the analysis presented here will help generate a discussion of these issues that will most definitely stay at the center of the nuclear disarmament debate in the coming years.

### **Missile defense and strategic stability**

The notion of the relationship between offensive and defensive forces goes back to the early days of missile defense. As the United States and the Soviet Union began deploying intercontinental ballistic missiles in the late 1950s, they were already looking for ways to protect themselves from a ballistic missile attack. In the early 1960s, both the U.S. and Soviet programs demonstrated technical feasibility of intercepting a ballistic missile, and in the following years the two countries proceeded with development of their respective missile defense systems. The Soviet Union was working on a number of projects, the most visible of which was the A-35 missile defense system around Moscow. The United States worked on its own system that was initially intended to provide area defense of the country. The U.S. project generated a great deal of controversy domestically and was subjected to a very thorough analysis. It was this analysis that identified and examined the link between defenses and offensive forces. At the end of this discussion it was generally accepted that missile defense systems introduce instability into the arms race, since deployment of a defense system could trigger an offensive buildup aimed at compensating for the assumed loss of capability of offensive forces caused by the defense.

These arguments played an important role in the U.S.-Soviet negotiations that resulted in two agreements signed in 1972 – the SALT Treaty that limited the offensive forces and the Anti-Ballistic Missile (ABM) Treaty that put a limit on missile defense deployment. The two treaties seemed to confirm a strong link between offense and defense—the limits established by the ABM Treaty were seen as a way to prevent countries from building defenses that could undermine the potential of the opposing side’s offensive forces. From this point of view, the limit on missile defense was an essential condition of the limit on the offensive forces, established by the SALT Treaty. According to one popular interpretation of the 1972 arms control agreements, the United States and the Soviet Union agreed to forgo defenses and leave themselves vulnerable to a nuclear attack in order to prevent a dangerous offensive arms race.

A closer look at the circumstances that led to the conclusion of the ABM Treaty indicates that the role of the link between offenses and defenses was probably much less significant than the traditional interpretation of that treaty might suggest. By the time the United States and the Soviet Union began the arms control negotiations in 1969, both countries had already concluded that effectiveness of missile defenses is extremely limited and that they cannot significantly affect the capabilities of the offensive forces that the two countries had built in the 1960s and were planning to build in the decade ahead. This conclusion was a result of at least two important developments – large-scale deployment of ballistic missiles and better understanding of the vulnerability of missile defenses to simple countermeasures.

Advances in ballistic missile technology resulted in a massive missile buildup in the 1960s, which fundamentally changed the calculation of the scale of defense systems that would be required to counter a missile attack – the United States deployed more than 1000 ICBMs by

1966 and the Soviet Union matched that number by 1968. Also, in the process of working on their respective missile defense systems both countries discovered vulnerability of missile defenses to a wide range of countermeasures – from precursor nuclear explosions that could blind radars to decoys and other penetration aids that can complicate detection of warheads. As a sign of these developments, in 1967 the U.S. missile defense program formally abandoned the goal of countering a Soviet ICBM attack and was reoriented to dealing with a limited unsophisticated attack from China. Accounts of the history of the Soviet missile defense program show that in 1967 the program also underwent a thorough review that essentially concluded that deployment of a territorial missile defense is impossible.

These developments opened a way for missile defense to be included in the agenda of the U.S.-Soviet arms control talks and allowed the two countries to negotiate the ABM Treaty that set a limit on their missile defense programs. It would be wrong to suggest, however, that the treaty actually limited these programs. Rather, the treaty codified the understanding of the limited utility of missile defense that already existed at the time. Missile defense programs were abandoned or downscaled not because of their potentially destabilizing effect on arms race, but mostly because they could offer no meaningful protection of population or the strategic forces. The actual influence of the ABM Treaty on missile defense programs was minimal – neither the United States nor the Soviet Union had to change their plans in a substantial way to accommodate the treaty constraints.

The limited role of missile defense in strategic calculations is also illustrated by the lack of specific plans to increase the size of offensive forces in anticipation of an ABM development. In terms of the number of ICBMs and ballistic missile submarines, the size of the U.S. strategic force was determined by the mid-1960s and had not changed substantially until the end of the Cold War. The Soviet missile defense program was clearly not a factor in that decision, even though some work on the Moscow missile defense had already been underway at that time. It can be argued that introduction of multiple independently-targeted vehicles (MIRV) in the second half of the 1960s provided the United States with an option to counter possible missile defense deployment, so it did not need to consider other plans to increase the number of strategic missiles. However, the link between MIRVing and missile defense proved to be rather weak – the limits on missile defense set by the ABM Treaty did not constrain the MIRV programs in any way.

The effect of missile defense on the Soviet missile development program was also quite limited. The size of the ICBM force that the Soviet Union built by the late 1960s was largely determined by the scale of the U.S. ICBM program. In the late 1960s the Soviet Union initiated a thorough review of its missile development strategy that determined the size of its ICBM force for the next almost twenty years. Accounts of the deliberations that were held at that time show that missile defense was not among the factors that determined the outcome of the discussion, which concentrated primarily on the issues of ICBM survivability. No evidence indicates that the Soviet Union considered an increase of the size of its missile force as a response to a potential U.S. missile defense buildup. The Soviet program did call for deployment of MIRVed missiles, but MIRVs were largely seen as a means of preserving retaliatory potential of ICBMs rather than as an anti-missile defense measure. The marginal role that missile defense played in this discussion is further

confirmed by the fact that the key targets of the ICBM modernization program were determined in 1970-1971, before the United States and Russia agreed to limit their defense programs.

All this strongly suggests that neither the United States nor the Soviet Union considered the balance between offensive and defensive systems as a guidance in determining the size and composition of its strategic offensive force. The prospect of missile defense deployment did not create a momentum for a substantial offensive buildup and the limit on defenses established by the ABM Treaty did not prevent large-scale deployment of MIRVed ballistic missiles. This again underscores the fact that the actual role of the ABM Treaty was not in restraining defenses in order to create mutual vulnerability, but rather in confirming the extremely limited utility of missile defenses and their inability to eliminate the vulnerability that existed in the first place.

The U.S.-Soviet missile defense debate in the 1980s, which concentrated on the U.S. Strategic Defense Initiative (SDI) program, in many important aspects followed the same general pattern. The relationship between defense and offense was at the center of the arms control talks, but the actual Soviet response to the U.S. program was much more modest than this relationship would suggest. Initially, the Soviet Union insisted that any reduction of strategic offensive forces would be impossible without limits on the U.S. missile defense program. The strong Soviet opposition to the U.S. plan was responsible for the failure of the Reykjavik summit to come to an agreement on elimination of nuclear weapons and led to a long delay with signing of the START Treaty. To the end of the negotiations the Soviet Union insisted on preserving the ABM Treaty, arguing that the treaty is an essential element of strategic stability.

Although the ABM Treaty remained in force when the United States and the Soviet Union signed the START treaty in 1991, the United States did not explicitly reaffirm its commitment to the regime that limited missile defense. This did not prevent the Soviet Union from going ahead with dramatic reductions of its strategic arsenal, even though it argued earlier that these reductions would be impossible as long as the United States continues its work on missile defense. Among the most important developments that made this change possible was a better understanding of the challenges involved in building an effective defense system, which the Soviet Union and the United States gained in the years since the Strategic Defense Initiative was first announced. As it was in the case of the ABM treaty, missile defense and the offense-defense relationship were not among the factors that had a real impact on the decisions about strategic forces that the Soviet Union made at the time.

Even though missile defense was only a minor factor in the U.S. and Soviet strategic offensive buildup, it did demonstrate that it might have a significant destabilizing potential. The nature of this potential, however, is not related to the actual capability of a missile defense system to intercept ballistic missile warheads and limit the damage that a missile attack can inflict, as the traditional defense-offense relationship model would imply. Rather, it is related to the inherent uncertainty of effectiveness of a missile defense system, which could be used to justify almost any assumption about its real capabilities. This generally means that effectiveness of a missile defense system can be assumed to be arbitrarily high or low, depending on the context in which the estimate is made.

This dynamics also manifests itself in the discussion of missile defense and its role in strategic balance that is currently underway in Russia. Russia has long maintained that the U.S. missile defense system and the deployment of elements of that system in Europe present a significant threat to its strategic forces. Accordingly, as Russia embarks on a massive modernization program, every new system under development is presented as a response to the U.S. missile defense program. This applies, for example, to the new ICBMs that Russia is working on—the capability of these missiles to carry multiple warheads is seen as essential for penetrating missile defenses. However, the modernization decisions made by Russia today take into account a wide range of other factors, so in the end, the capability of a certain system to counter missile defense is rarely the decisive factor.

### **Missile defense and limited strikes**

Most of the missile defense development in the last thirty years is concentrated in the United States, where missile defense is now considered one of the key elements of the national security strategy. During this time, the U.S. missile defense program underwent a number of transformations that adjusted its mission, sometimes quite substantially. It is currently oriented against a limited intercontinental ballistic missile attack that could come from countries like Iran or North Korea. The program is also supposed to build protection against regional missile threats, presumably coming from these and other countries. According to the 2010 Ballistic Missile Defense Review, the goal of the program is to “create an environment in which the development, acquisition, deployment, and use of ballistic missiles by regional adversaries can be deterred, principally by eliminating their confidence in the effectiveness of such attacks.” This goal has a broad support among the U.S. allies, who either already participate in joint missile defense arrangements, like Japan, or, like NATO, consider initiating their own effort to augment the system build by the United States in Europe to extend its coverage to the territory of the alliance.

Russia, on the other hand, believes that it finds itself on the other side of this equation – the limited attack that the U.S. missile defense is intended to counter well may be the retaliatory strike of the Russian strategic forces. According to one point of view that is widely shared in Russia, the United States could gain the capability to negate Russia’s retaliatory capability by launching a first strike that could reduce the strength of Russia’s response to the point where missile defense is effective.

Adding to the controversy is the fact that missile defense is sometimes presented as a way of dealing with limited missile threats that could support the vision of nuclear disarmament. A number of experts suggested that missile defense could play a useful role in a nuclear weapons free world by providing a mechanism for dealing with proliferators without resorting to nuclear weapons. It is easy to see that this vision is not compatible with Russia’s view of missile defense as a factor undermining the effectiveness of its nuclear force.

A closer look, however, suggests that missile defense is very poorly suited to coping with limited missile threats, whether from potential nuclear and missile proliferators like North Korea or Iran, or from a “weakened” retaliatory strike from a country like Russia. The reason for this is the significant asymmetry in the calculations of an attacker and those of the defense in scenarios that involve protection of population from a nuclear attack.

As for a threat from a proliferating state, if consequences of an attack are grave enough, as they would be in the case of nuclear weapons used against civilian population, the threat of a strike would have to be taken seriously even if the probability of its success is extremely low. In fact, in most relevant scenarios that probability would indeed be rather low. First of all, it would be determined by technical factors, such as reliability of the missile and its warhead. If a scenario considers a proliferating nation, we can assume that it does not have a capability to perfect its missiles or nuclear devices in a series of tests, so the confidence in their technical performance would not be very high. In the scenario of a disarming strike against Russia's strategic forces, the effectiveness of this strike would be the major factor in determining the scale of the response.

Taken together, these factors mean that the probability of a successful strike against a country protected by missile defense would not be particularly large. If the scenario involves an inexperienced proliferator or if the disarming strike is very effective, this probability may well be a few percent or even lower. What missile defense can do in this situation is to reduce this probability even further. How much further would depend on the effectiveness of the missile defense, which is also characterized by some uncertainty. Actual performance of missile defense is virtually impossible to predict, but whatever the range of estimates one can never assume that missile defense will perform with 100 percent effectiveness. This means that missile defense would be able to reduce the probability of successful attack from an already low number to a number that is somewhat lower. Whether this would make any significant difference in the strategic calculations of the sides involved in a conflict depends on the specifics of the situation. In most cases, contribution of missile defense will be negligible at best.

In the most important scenario, in which a conflict involves a threat of a nuclear strike against civilian population, missile defense would not be able to change strategic calculations on either side of the conflict. Given the catastrophic consequences of a strike of this kind, this threat would be very potent even if the probability of success is very small. This means that the attacker would most likely be content with the low probability of success, for it does not significantly affect the effectiveness of his threat. It is true that the defense could somewhat reduce the probability of a successful attack (or retaliation), but since it could never eliminate it completely, this is unlikely to have any effect on the calculations of the attacker. Moreover, because of the significant uncertainty associated with all the factors that contribute to the perception of threat, any effect that missile defense might have would be impossible to evaluate. For example, it may be that missile defense would reduce the probability of success from about 20 percent to, say, one percent. But it may well be that it would, in fact, be reducing that probability from one percent to about 0.05 percent. Since neither side has a reliable way of evaluating these numbers, there is no reason to expect that the attacker would know the difference between the outcomes outlined here or be deterred by the additional uncertainty that missile defense might introduce.

In a context of a retaliatory strike by a country like Russia, missile defense could probably reduce the damage that that strike could inflict, potentially bringing it lower than a certain "unacceptable damage" level. If this is the case, the argument goes, Russia's strategic forces would no longer be able to deter its adversaries, which is exactly the situation it is trying to

avoid. There are, however, two important factors that this line of argument ignores. First, the numbers behind the concept of “unacceptable damage” have always been completely arbitrary. Historically, both the United States and the Soviet Union turned to the specific levels of damage post-factum, to justify the weapon deployment levels that were determined by other factors, unrelated to the level of damage their strategic forces are able to inflict. Second, in a scenario of a disarming strike, whether or not it is supported by a missile defense, followed by retaliation the uncertainty in the outcome of an attack remains so large as to make any prediction of the damage level meaningless.

The inherent uncertainty of the outcome of an attack means that the introduction of missile defense would not be able to change the calculation of the side that the defense is intended to protect. Confronted with a threat of a nuclear attack against its cities, the defending side would have to make a decision on whether an outcome of a conflict in which this attack is successfully delivered is acceptable in principle. Depending on the circumstances of a specific conflict it may or may not be. But in any of these cases, missile defense would not be able to change the dynamics of the conflict in a substantial way.

If a nuclear attack on a population is deemed unacceptable, as it is likely to be in virtually all circumstances, the defending side would have to deal with the fundamental uncertainty of effectiveness of missile defense. The fact that would matter in this case is that even though confidence in defense could be very high it is impossible to count on it to be 100 percent effective (the same would apply to other defensive or offensive measures). So, missile defense would not give the defending side any new options of dealing with the threat beyond those that are available without defense, such as deterrence (conventional or nuclear) or negotiations.

If the defending side is ready to consider absorbing a nuclear attack on its population, the role of missile defense becomes somewhat more complex, but still insignificant. From the point of view of handling the conflict, the decrease in the probability of success of an attack that missile defense might offer does not create any additional options for the defending side, especially in those cases where that probability is fairly low. There is no discernible difference between a situation in which the attack has, say, one percent probability of success and the one in which this probability is a small fraction of percent. Moreover, these numbers are unlikely to be known with any certainty anyway, which would completely mask any contribution that missile defense might make. This applies also to the presumed ability of missile defense to protect the population by intercepting the incoming missile—there is no reason to believe that defense’s contribution to damage limitation is significantly greater than that of other available options. That contribution may, in fact, be negative, for example in cases when overconfidence in missile defense would mean forgoing more promising options of dealing with the treat or allowing the conflict to escalate to the level of an actual attack.

There are some scenarios in which the damage-limiting capabilities of missile defense can play a positive role. In general, these are situations that involve attacks against military targets, but they might also include non-nuclear threats to a population—conventional missile attacks and, to a certain degree, attacks involving chemical and biological weapons. In contrast with the case of a threat of a nuclear attack on cities, in a scenario that involves military facilities the defending side can anticipate and tolerate a certain level of damage,

which substantially changes the calculations of the conflict participants. The attacker could no longer assume that the threat of an attack is insensitive to the probability of success and the defending side would no longer need an impenetrable defense. If a country is willing to absorb an attack, damage limitation with an imperfect defense may be a viable strategy. It is worth noting that that was exactly the strategy behind the deployment of the first U.S. missile defense system, Safeguard, which protected an ICBM deployment area. The early deliberations on what later became the Strategic Defense Initiative also assumed that the defense would be used to protect land-based missiles, rather than the population. The Soviet Union did deploy its missile defense around Moscow, but protection of the population was never the mission of the system.

While this analysis suggests that missile defense is unlikely to play a useful role in dealing with potential proliferators, it also indicates that missile defense should not be a serious obstacle on the way toward complete nuclear disarmament. As nuclear weapon states reduce their arsenals, they will inevitably reach a point at which the actual level of damage that their nuclear forces can inflict on an adversary would not be as important as the capability of inflicting at least some damage. (In fact, it can be argued that most nuclear weapon states always relied on this assumption.) In this situation, missile defense could somewhat reduce the probability of a successful attack but it would not be able to completely eliminate it. This understanding, however, is unlikely to be accepted by the nuclear weapon states unless issues related to missile defense are addressed in a broader political context, as discussed in the next section.

### **Missile defense in the U.S.-Russian relations**

Substantial progress toward nuclear disarmament would require reconciling two seemingly contradictory trends: reductions of nuclear arsenals and deployment of missile defenses. Traditional solutions assume that missile defenses would have to be restrained to allow nuclear weapon states to preserve deterrent potential of their strategic forces. This approach, which is clearly inspired by the precedent established by the ABM Treaty, is favored by Russia and probably China. The United States does not support the idea of new restrictions on missile defenses, insisting that they are not necessary since its missile defense is not intended to counter strategic forces of Russia or China. In general, the idea of limits on missile defense development enjoys fairly broad support, since it appears to be the most direct way to ensure progress in nuclear disarmament. A different approach to missile defense calls for transformation of the relationship between the United States and Russia in a manner that would drastically reduce and then eliminate the role of nuclear deterrence in that relationship, making missile defense irrelevant. In fact, joint work on missile defense was suggested as a possible mechanism of this transformation, even though at the moment it appears to be an extremely remote possibility.

There has been already some development in these areas. The New START Treaty between Russia and the United States contains a provision that recognizes “the interrelationship between strategic offensive arms and strategic defensive arms” and states that “this interrelationship will become more important as strategic nuclear arms are reduced.” At the same time, the treaty states that the current missile defense systems “do not undermine the viability and effectiveness” of strategic forces of the parties. While agreeing that the current defenses cannot threaten its deterrence potential, Russia made a unilateral

statement in which it asserted its right to withdraw from the treaty if the U.S. system “threatens the potential” of Russia’s strategic nuclear forces.

In addition to the New START Treaty, which largely affirmed the traditional approach to the link between offenses and defenses, the United States and Russia have explored a possibility of cooperation on missile defense. Although at this time any cooperation in this area is extremely unlikely, this option will probably remain open in the long term. At the very least, this cooperation would probably include joint analysis of missile threats and some coordination of missile defense plans between Russia and NATO.

The most serious problems in the current impasse over missile defense is the clear contradiction between the positions of Russia and the United States. Russia’s insistence on legally binding limits on missile defense shows that it considers the U.S. missile defense to be a threat to its strategic forces. The United States, on the other hand, remains strongly committed to expanding its missile defense system, which it believes could provide protection against emerging ballistic missile threats. To complicate the matter, missile defense remains one of the most highly politicized national security issues in Russia as well as in the United States, making any political arrangement extremely difficult to achieve. In Russia, the issue of offense-defense relationship is part of a broader agenda of maintaining “strategic balance” with the United States. The United States considers missile defense to be an essential element of its ability to project power to various regions and maintain its security alliances.

As this analysis demonstrated, there are arguments that suggest that neither country has a strong case to support its position on missile defense. The link between offense and defense underscored by Russia is much weaker than it is often assumed—Russia’s deterrence potential is never really in danger. The United States, on its part, seriously overestimates the role of missile defense in countering proliferation of ballistic missiles and nuclear weapons. However, the strong political support that these positions have in Russia and the United States makes them extremely resistant to change. This does not mean that a change is not possible. It would, however, require a significant effort on the part of both countries.

The traditional solution of the missile defense problem that would establish new limits on missile defense development and deployment will almost certainly fail. Even if this measure were possible, it would at best provide a temporary relief in the short term, only to bring questions about offense and defense at the later stages of arms reductions. It is also clear that the United States will continue strongly resisting any attempt to limit missile defenses. The perils of this approach were demonstrated in the New START process—the provisions of the treaty that reinforce the link between offenses and defenses almost derailed the treaty ratification in the United States.

As the history of missile defense programs demonstrates, a more reliable way of dealing with the instability and uncertainty that these programs bring into the strategic situation is to expose limits of the technology and the extremely limited utility of missile defense. All missile defense programs in the past have been demonstrated to be irrelevant and there is no reason to expect that the technologies that are developed today would be any different. As missile defense programs progress and start dealing with real-world threat

environments, such as the Soviet Union or the United States in the past or Russia, Iran, or North Korea today, they normally come to realistic conclusions about their ability to counter missile threats. The most challenging part of this process would be to make sure that missile defense is subjected to independent scrutiny and that the assessment of its capabilities and role is shared by all involved countries.

From this point of view, cooperation on missile defense between Russia and the United States is probably the most promising way to address the current missile defense controversy. This cooperation could provide the two countries with a mechanism of developing a common understanding of the technological and political limits of missile defense. It could also help deal with the unnecessary politicization of the issue that is one of the most serious obstacles on the way to mutual nuclear disarmament. Once the missile defense program is depoliticized, it would most likely be scaled down to reflect its limited role in countering proliferation of ballistic missile and nuclear technologies. The recent transformation of the U.S. program that oriented it toward a limited set of goals—protection of forces against regional threats—suggests that this process is already underway.

The cooperation, in one form or another, would also help Russia to reach a conclusion about the limited capabilities of missile defense. One of the reasons Russia's opposition to missile defense is so strong is that Russia does not have a similar program of its own. As a result, the estimates of the U.S. system potential are often detached from reality and manipulated for political purposes. In the past, it was the Soviet own program that helped the Soviet leadership understand the limits of missile defenses and shape its policies accordingly.

To sum this up, the link between missile defense and strategic stability is not as strong as it may appear from the political debate. The reason it figures so prominently in the political discussion is that the defense does have an appeal of offering a technical solution to the most important national security problems. However, every time missile defense had to confront an actual missile threat, the solutions it can offer were quickly found to be inadequate. Unfortunately, this never prevented missile defense from being a catalyst of misunderstanding and mistrust that is responsible for an unnecessary nuclear buildup and a series of setbacks on the road toward nuclear disarmament. It still has a potential to complicate the process of nuclear reductions and the efforts to stem nuclear proliferation. It does not have to be that way, though—proper analysis of what missile defense can and cannot do will ultimately bring it to its proper place of one of the technologies that could play a limited role in a very narrow set of circumstances.