Missile Defenses:
The Political Implications of the Choice of Technology

by Camille Grand *
Research Associate, *Institut Français des Relations Internationales* (IFRI), Paris, France

Missile defenses (MD) offer an interesting example of a technological debate with major political implications, which, in many ways, recalls the "old days" of Cold War nuclear theology. Additionally, when the drivers of a strategic decision are in theory primarily political, we face technological choices with tremendous political and international implications.

The purpose of this paper is not to discuss the various missile defense technologies, and their maturity, feasibility, efficiency or cost. The paper assumes that all known technological options are already available or could be available in the forthcoming decades. It tries to assess these possible technologies only through one single factor: their political consequences.

The fact that missile defenses have a political impact, long before having a military effect, justifies such an approach, since we are likely to face numerous debates about missile defense choices before most of the possible technologies are even ready to be deployed.

The paper will primarily focus on the interceptor technologies, since the rest of the BMD architecture (sensors, radars, etc.) is likely to be deployed whatever interception method is chosen. This part of the architecture is, of course, strategically just as important and meaningful. For instance, the early-warning radars have major political implications as the location, the technology and the capability identify the threat and will also have strategic consequences for hosting nations when they are not located on U.S. territory.

For each of the discussed MD options, it is necessary to keep in mind several issues:

- Does the technology offer the expected security benefits for the deploying country?
- Are the targeted "rogues states" convinced not to use ballistic missiles?
- What is the perception of the major powers in each regional framework and beyond, and in particular of Russia and China?
- What are the effects on U.S. alliances in East Asia, the Middle East, and Europe?
- Is the chosen technology undermining or strengthening arms control and non-proliferation regimes?

As we will fully realize in the course of the paper, no option emerges as the single best solution, as each offers benefits and pitfalls. This is probably the reason why the Bush administration intends to pursue several programs in order to address various strategic situations. For the proponents of missile defenses, a multi-layer system is not only a strategic choice for efficiency; it is also a political imperative to address the numerous missions assigned to MD.

Missile defense technological choices nevertheless need to be handled with care, especially when it comes to the most ambitious technologies. No choice is innocent or, at least, none will be perceived as such.

In order to try to offer a useful typology, the paper will first review the various strategic and

* *The views expressed in this paper are solely those of the author*

political frameworks in which missile defenses will play a role, before going through the various technological options in the field of ballistic missile defense and test them against the issues raised above.

THE VARIOUS STRATEGIC FRAMEWORKS IN WHICH MISSILE DEFENSES ARE LIKELY TO ENTER INTO PLAY

In the course of the following brief review of the politics of MD technology in various strategic frameworks, we will underline how different is each regional framework involving MD.

The U.S.-Russian Bilateral Framework: Missile Defense and Strategic Stability

The U.S.-Russian framework is the only framework in which ballistic missile defenses have been deployed in the long term. They played a role during the Cold War. It is also the only framework in which legal constraints currently exist on MD deployments through the Anti-Ballistic Missile Treaty (ABMT).

As far as technology is concerned, the core issue in the bilateral framework is likely to be the future of strategic stability, not only because Russian diplomacy insists on this concept. The number of nuclear weapons involved also make strategic stability an absolute necessity in this context for the global environment. Strategic stability can not be assessed in a theological approach identifying it with the ABMT, as is still too often the case.[1]

In the U.S.-Russia framework, the core issue for a MD deployment is therefore to preserve a form of strategic stability in the bilateral relationship. In his May 1st National Defense University speech[2], President Bush outlined a "new framework" involving the development of missile defenses and offered Russia an active partnership in the definition of this framework. As no technological options are currently ruled out, his proposal does certainly not, at this stage, offer adequate guarantees from a Russian perspective. Looking at technology, two issues are likely to be crucial in this particular context.

Even though most Russians would agree that the Russian nuclear deterrent would not be threatened by any foreseeable U.S. MD deployment, a logic of reassurance needs to influence technological choices. The more expanded and capable the MD system will be, the more Russia will need to retain a large nuclear deterrent in order to achieve a worse case scenario credibility (*i.e.* assured Russian second-strike capability, even in the event of a U.S. nuclear first-strike combined with an expanded multi-layer MD). In this regard, the Russians are likely to welcome limitations to the system in terms of the number of interceptors deployed, and of the capabilities of U.S. early-warning systems (SBIRS-Low and land-based sensors in particular). A certain degree of technological transparency on the U.S. part is likely

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[1] For a critical reading, refer to two papers by Thérèse Delpech, "Les défenses antimissiles et la sécurité internationale au XXIe siècle", *Les notes de l'ifri*, n°32, Mars 2001, and "Ballistic Missile Defense and Strategic Stability," paper presented at the forum "The Missile Threat and Plans for Ballistic Missile Defenses: Impact on Global Security," Rome, Italy, January 18-19, 2001, http://www.mi.infn.it/~landnet/NMD .
See also my own paper in the previous issue of this MIIS/Mountbatten Centre Occasional Paper series: Camille Grand, "Ballistic Missile Threats, Missile Defense, Deterrence, and Strategic Stability" in *International Perspectives on Missile Proliferation and Defenses*, Special Joint Series on Missile Issues with Mountbatten Centre for International Studies, Center for Nonproliferation Studies, Monterey Institute of International Studies, Monterey, CA, March 2001.

[2] See *Remarks by the President to students and faculty at National Defense University*, May 1, 2001 available at http://www.whitehouse.gov/news/releases/2001/05/20010501-10.html .

to make the system more politically acceptable to Moscow. Space-based assets could in this context create a major issue between the two countries.

Bilateral technical cooperation can help solving some of the political mismatches created by technological choices. The Russians have no opposition whatsoever to TMD systems. As long as these systems respect the 1997 Demarcation Agreement, they have even offered to cooperate in this field with the Europeans and the Americans. Even though this proposal has not been structured yet, it deserves a serious assessment, as technological cooperation could in this case prove politically stabilizing. Exchanges about MD technology could therefore help achieve the political objective of demonstrating the unthreatening nature of the MD deployment for the Russians and therefore strengthen a renewed strategic stability.

Asia: Is There an Acceptable MD Scenario?

Given Chinese vocal opposition to both NMD and TMD, it seems virtually impossible to design a MD system that would be politically acceptable while achieving a minimal technological efficiency. In practice, this might prove less of a challenge than at first sight. In its open-ended nuclear modernization process, China has decided to be in a position to defeat any U.S. missile defense. Unless both countries are willing to enter a costly arms race - and this is seriously considered by hawks both in Washington and Beijing - the problem could end being partly similar to the Russian one with two core differences:

- In the Russian case, the issue is how far down can Moscow go, in the Chinese case, it is how far up should Beijing go.
- While Moscow is involved and interested in TMD programs, China views them as even more threatening.

Most of the answers to these issues are, of course, primarily political, but technology can add to the problem or offer some strategic benefits. A reliance primarily on boost-phase intercept to handle the North Korean threat is obviously less threatening from a Chinese perspective. The degree of interconnections amongst the TMD systems envisaged for Japan or Taiwan and the U.S. home defense is also a core issue. Once again, the transparency of the technological choices made will be critical in alleviating Chinese concerns.

Other Areas: TMD for Homeland Defense?

In the rest of the world, especially the Middle East and Europe, the likely development of MD is likely to rely primarily on TMD technology (see below for more details). The core politico-technological issue becomes, in this context, the degree of interconnection of the various systems. In this regard the United States faces a strategic choice with major political implications:

1. The United States government decides to rebuild its alliance network around MD sub-systems as part of a global architecture to counter the missile threat. Through an integrated MD network, it hopes to strengthen its security ties with several key countries in Asia, the Middle East, and Europe. It also runs the risk of provoking adverse reactions (including asymmetric military responses) from potential adversaries (much beyond the so-called "rogue states") and from some friends and allies less enthusiastic about MD.
2. The United States accepts the existence of the various approaches of its friends and allies to MD, ranging from enthusiastic involvement (Israel and Taiwan) to a form of cautiousness close to reluctance (many Western Europeans, South Korea).

From a technological perspective the core issue is, in this case, not to transform the MD debate into a global new security paradigm and to accept a certain degree of discrepancy in the MD choices in the various regions where deployment is envisaged. A technological sub-question would, of course, be whether the various MD sub-systems remain entirely

dependent on U.S. assets or can work autonomously.

To a certain extent, MD can be a technological fix to the challenge created by WMD and missile proliferation. The technological options can, however, sometimes create more problems than they offer strategic benefits. It is therefore necessary to assess precisely the political implications of every technological choice, since the best or most efficient technology can in some cases prove the most destabilizing in the political realm.

THE VARIOUS MD TECHNOLOGIES AND THEIR POSSIBLE POLITICAL IMPLICATIONS

The TMD Family

Theater missile defenses already cover a wide range of technological possibilities. They range from air-defense systems with very limited anti-missile capabilities to upper-tier systems that can cover wide areas.

The only thing they definitely have in common is compatibility with the ABMT, since the United States and Russia signed in 1997 a Demarcation Agreement (though not ratified by the United States) that draws a technical line between TMD and NMD systems. It allows research, development and deployment of the first category of interceptors, as long as certain criteria are respected. TMD systems' capabilities are accordingly supposed to be limited and should only allow them to handle missiles with a range below 3500km. They are therefore not designed to handle ICBMs, and cannot accordingly provide a homeland defense against such threats.

TMD can also offer some non-proliferation benefits in regions where proliferation occurs. They are a disincentive to acquire WMD as they provide a military response. Many countries in various regions have expressed an interest for such deployments either on a national basis or through a U.S. deployment. They nevertheless do not alter strategic stability among major powers as they only have a limited capability. They are therefore widely regarded as politically stabilizing in most cases.

Lower-Tier TMD Systems

The PATRIOT-like systems are the most mature BMD systems, as they are already deployed. They only have a very limited capability, even though one can assume that some progress has been achieved since the Gulf War.

They can offer a reassurance for a force deployed abroad or for allies in regions of concern. They politically can foster alliances and the ability of to intervene in regions where missile technologies have spread. Their limited capability makes them in most cases unthreatening to countries possessing missiles that go beyond the SCUD-like missiles.

Even though China has expressed dissatisfaction with the deployment of PATRIOT PAC-3 in East Asia, such systems do not raise the same level of concern as any other more efficient BMD capabilities, as they can easily be saturated or overcome by larger and faster missiles.

The spread of such systems raises the issue of compliance with existing regulations of missile technology export controls, as they can provide technologies usable in offensive weapons.

Upper-Tier TMD Systems

Compared to lower-tier, although these systems fall in the same TMD category, and have wider capabilities, they tend to raise more problems. They are coming closer to the limits between TMD and NMD set by the Demarcation Agreement and they can lead to diplomatic debates about their compatibility with the provisions of the ABMT.

As a very flexible tool, Navy upper-tier systems such as Navy Theater Wide are an ideal tool for power projection, and are therefore criticized as an

instrument of U.S. hegemony. They nevertheless remain TMD systems with inherent limitations.

Altogether, TMD systems have the greatest degree of political acceptability. They nevertheless raise concerns on the part of China for two main reasons: they can be used in the Taiwanese context and offer to the "rebel island" a tool to counter Chinese SRBMs and MRBMs. What China fears the most is the interconnection between regional systems and a NMD. TMD systems are more or less acceptable, if they do not appear as the first step of a much larger integrated architecture. Except for China, most other countries have no opposition to TMD, and often expressed a clear interest in acquiring the technology in the mid-term.

If TMD starts to spread, the reaction of countries pursuing missile programmes remains to be seen. Possibilities are: build-up to saturate defenses; search for increased penetration capabilities; shift to alternative delivery means; or abandonment of missile programs. This last point demonstrates, if needed, that even a benign TMD deployment can have heavy political consequences.

Strategic Missile Defense: Just Another Story

Technologies aimed at intercepting long-range ballistic missiles are much more demanding as speed and range change.

The Clinton NMD

The option envisaged by Clinton focuses on terminal defenses covering the entire territory of the Unites States. They raise complex political issues.

First of all, they necessitate an abrogation or a major restructuring of the ABMT, as no nation-wide missile defense can be ABMT-compliant.

Secondly, they are currently viewed as threatening by the Russians, and, to a much larger extent, by the Chinese. Both countries are therefore likely to react diplomatically and possibly to use various response ranging from arms control treaty withdrawal to missile build-up, or technology transfers.

The key issue is in this case to demonstrate the inner-limitations of the proposed system in order to reassure Beijing, and Moscow. It yet unclear whether such an effort will be sufficient to circumvent Chinese and Russian anxieties and whether the United States is ready to accept any binding limitation on its missile defense program.

Two tools can be used to demonstrate such limited capabilities: the number of interceptors and the network of sensors. The trouble is that Chinese experts and officials argue that even the Clinton NMD could have had a neutralizing effect on their deterrent in its so-called "expanded-C3" capability (20 warheads with penetration aids). In this regard, geography is not of much help since monitoring North Korea or Iran involves sensors that are, *de facto*, useful against China and Russia. Under these conditions, the perceptions in Beijing and Washington are just as important as technical realities.

Nuclear Interception

This is worthy of mention at this stage for two reasons. It the only Anti-Ballistic Missile (ABM) defense deployed today (by Russia for the defense of the Moscow area), and it is considered by many experts as the most efficient defense against an intercontinental missile attack. Nuclear defenses are nevertheless very much a non-starter, as their nuclear nature makes them unpopular. They would require the same amendments to the ABMT to act nation-wide. They can accordingly not solve any political issue and are only likely to raise more objections.

Is Boost-Phase Intercept a Panacea?

Many renowned U.S. experts have argued in favor of BPI as the best and most efficient and

acceptable form of MD.[3] President Bush insisted on that particular option in his already quoted National Defense University speech. It resolves technical problems with the discrimination capabilities of the EKV. It is also described as much less threatening for large continental powers such as China or Russia. BPI is likely to have no capabilities against these two countries, except in the case of Chinese medium-range missiles located on the Southern shore.

BPI nevertheless must overcome serious technical problems if it is to be efficient even vis-à-vis North Korea, not to mention countries with more strategic depth. It needs a permissive environment to be deployed at sea and, of course, to be land-based in the vicinity of missile-armed countries. Another major political problem with BPI, is that the interception occurs early, making mistakes possible such a destroying a satellite-launcher, or firing at a regular missile test.

If BPI moves into laser technologies, as the Air Borne Laser (ABL) becomes operational, some of the political benefits are likely to disappear as the technical limits perceived by the Russians and the Chinese will partially disappear. This all the more true for the Space-Based Laser (SBL).

Outer Space: The New Frontier

The use of space to deploy MD assets is likely to be a crucial debate politically and could raise major criticism internationally, as it is very difficult to identify any limit if this threshold is crossed. Rightly or wrongly, a space-based system is perceived as challenging the whole international security framework, mainly because it is virtually impossible to offer assurances about the limited nature of such defenses. Ironically, the United States might be the great loser of an arms race in outer space.[4] For all these reasons, it is therefore, in my view, the most sensitive issue in the future.

CONCLUSION

From our review of the various possible frameworks and MD technologies, it is clear that some options are more politically acceptable than others. Non-technological choices that will, of course, also play a major role in the political acceptability of missile defenses include:

- Evolution of the threat;
- Date of deployment;
- Relative transparency of the deployment choices;
- Accompanying arms control and reduction measures; and
- Relationship to deterrence.

Since MD are likely to associate different sub-systems in a system of systems, a key issue will also be the degree of interconnection between all sub-systems. If the systems are fully integrated, even limited TMD capabilities will be perceived as threatening by some. The number of interceptors announced will also be a major element driving political reactions. Nevertheless, the key issue is likely to be the way the United States decides to proceed.

The more cooperative the approach to deployment, the more likely is a de-dramatized political debate in forthcoming years. The United States administration has a specific responsibility in this framework. Whatever technology it chooses to pursue, they will need to be convincing about the limits of the deployed systems, to be transparent on their final objectives, and to act cooperatively with all states concerned in order to diminish opposition. In spite of President Bush's proposals, it is not clear

[3] See in particular Richard Garwin, "Boost-Phase Intercept : A Better Alternative", *Arms Control Today*, September 2000, Volume 30, Number 7

[4] See Michael Krepon, "Lost in Space: The Misguided Drive Toward Antisatellite Weapons", *Foreign Affairs*, May-June 2001

at this stage that the United States government is truly ready to engage in such an open approach, *i.e.* to accept constraints on the system to meet international concerns. The key is, therefore, not so much the technology chosen as the desire to associate other countries and to alleviate some of their concerns.