SWP Research Paper
Stiftung Wissenschaft und Politik
German Institute for International
and Security Affairs

Alexander Bitter

NATO and Missile Defence

Implications for Germany before the Bucharest summit in 2008

RP 13
December 2007
Berlin

SWP
Stiftung Wissenschaft und
Politik German Institute for
International
and Security Affairs

Ludwigkirchplatz 3–4
10719 Berlin
Germany
Phone +49 30 880 07-0
Fax +49 30 880 07-100
www.swp-berlin.org
swp@swp-berlin.org

ISSN 1863-1053

Translation by
NATO Headquarters, Brussels

(English version of
SWP-Studie 29/07)

Table of Contents

Major GS Alexander Bitter is a researcher at the European and Atlantic Security Research Unit of SWP

NATO and Missile Defence. Implications for Germany before the Bucharest summit in 2008

At its summit in Bucharest at the end of April 2008, among other things NATO will deal with the question of missile defence for Europe. A decision on the way ahead would be of fundamental importance for the general strategic direction taken by the alliance.

The debate is not new. The NATO Strategic Concept of 1999 already mentioned the specific dangers to the territory of the alliance from weapons of mass destruction and their vectors. At the Riga Summit in 2006 the NATO member states discussed the results of a missile defence feasibility study which they had commissioned in 2002 at the Prague Summit. As this study leaves less room for doubt about the technical feasibility of missile defence, at the moment detailed investigations of system architecture, command procedures and finance are in progress. In addition NATO is attempting to assess what consequences the use of a defence system might have—for example falling debris or a nuclear explosion at high altitude. In parallel the US national programme is being pushed forward at great expense, and has achieved considerable technological progress. Many components are in production or already in service. Bilateral cooperation agreements have already been concluded with Australia, Great Britain, Denmark, Israel and Japan, and negotiations are now taking place with Poland and the Czech Republic.

Thus the American defensive shield is becoming a reality. With this system the United States wish to guarantee the integrity of their territory and preserve their military freedom of action, in order to be able to restore the international order in the Near and Middle East if need be. Even after a change of government in Washington in 2008, no substantial changes of direction in this regard are to be expected. The USA has now increased the pressure on NATO with the offer to bring a considerable part of Europe under its defensive shield. Of course the US administration will not be very willing to wait long for a decision by the Europeans. Thus this could be the last opportunity for the latter to prevent the USA going it alone with individual European members of the alliance.

In the very emotionally-charged public discussion an extremely relevant aspect has not received much

attention. Missile defence touches on the core of the original fundamental reason for the existence of NATO: the protection of the alliance area and its inhabitants from harm. This subject cannot be considered in isolation from the German point of view. The Federal Republic must also consider the security needs of the members on the periphery of the transatlantic alliance, not least because for decades it was itself in this position. Another point to bear in mind is that the trouble spots of the Near and Middle East remain impossible to keep peaceful by diplomatic means alone. If Germany should come within the range of regimes equipped with weapons of mass destruction and their vectors, and if military action by the international community became necessary against these regimes, its strategic situation would change radically. No one can foresee the actual risks and threats of the future. But a credible defensive shield for NATO would make it less interesting for other states to possess long-range missiles—against which there was long thought to be no defence.

The central question of this analysis is what options the European members of NATO have in view of the rapid development of the American programme. In addition proposals are considered for a possible European contribution, a command structure and a decision-making process involving the Europeans.

Before involvement in the decisive phase of negotiations within the transatlantic alliance, it is urgently necessary to define a framework of action for the Federal government. For this purpose the aims and interests of German security policy should be central. We must make clear the circumstances in which it would be advisable to construct a European architecture for defence against ballistic missiles in the framework of NATO. From the German point of view five criteria seem particularly important. Firstly we must determine the *risks and threats to Europe*. Secondly it must be verified that the programme for missile defence would meet the original and essential *goal of the transatlantic alliance*, the security of the territory and its population. Thirdly, *aspects of financing* must be given due consideration, as Germany with its population and economic strength would have to bear a considerable part of a defence system's cost. In case the Europeans decide against their own defence system and simply rely on the capabilities of the USA, Germany and its European partners must have the possibility of exerting *influence on the decision-making processes,* for attacking missiles would pass over many countries in a very short time. In the fifth place it is in Germany's interest to *cooperate with Russia* and to convince Moscow that this is a defensive system which is not directed against the Russian Federation.

The analysis comes to the conclusion that accepting the American offer and progressive involvement in missile defence would bring justifiable, quite low technological risks. The project would also fall within an acceptable financial envelope, and be accompanied by an enormous increase in military capabilities for NATO. The Federal government should press for agreement on a missile defence programme in NATO. Because of the high cost of a purely European solution, the European members of NATO should accept the American offer. In order to fill the gaps in the US defensive shield, it would be advisable to acquire the American Terminal High Altitude Area Defence (THAAD) missile defence system, and to attempt to obtain American licences for European companies to produce individual components. In addition NATO should consult and involve Russia as early and as extensively as possible, but without endangering its own freedom of action.

SWP-Berlin
NATO and Missile Defence
December 2007

The Situation

The intention of the USA to station elements of its missile defence[1] system in Poland and the Czech Republic has raised controversy in Europe. At the moment NATO is giving deep consideration to this subject. It may seem unsatisfactory that any decision for or against some kind of European or German involvement will involve a degree of uncertainty. However this is more the rule than the exception where security policy and risk management are concerned. It is indispensable to analyse the circumstances accurately, precisely in order to minimize this uncertainty.

Risks and Threats for Europe

For decades Europe has been within geographic range of ballistic missiles. Outside NATO, admittedly, only China and Russia have missiles which can threaten *all* European territory. Like France, Great Britain, the USA, Israel, India and Pakistan, both states also possess nuclear weapons.[2] Among the atomic powers there is a complex balance of partnerships and mutual deterrence. Expecting a reaction of incalculable severity considerably reduces enemies' readiness actually to use such weapons.

From the European viewpoint, current threat assessments focus on two states: Iran and Pakistan. However at the moment Iran does not possess nuclear weapons, and nor is central Europe within range of its missiles. If this country should gain possession of atomic weapons in the coming years, it would have to develop smaller nuclear warheads suitable for firing with ballistic missiles. The US intelligence services expect that from 2015 Iran will dispose of such missiles with a range of more than 5500 kilometres. But this assumption is questionable. The middle-range missiles of types Shahab-3 (with a range of about 1300 kilometres) and Shahab-3A (1500 kilometres) which Iran now possesses are powered by liquid fuels. They can already reach one NATO nation, Turkey, and a European Union (EU) member state, Cyprus. Iran is working to increase the range of these weapons. For military purposes, however, solid-fuelled missiles are better. They are always ready for operation—even mobile missile types[3]—as in contrast to liquid-fuel missiles they do not have to be filled up first, and refuelling equipment can also be dispensed with. However, developing and operating such missiles involves considerable obstacles, which Iran can probably not overcome at this time. In addition, because of the arms embargo imposed by the UN Security Council at the beginning of 2007, Iran will likely make considerably slower progress in this field than assumed by the Americans.[4] If this is so it will only postpone the problem and not remove it permanently. The delay will however give the international community time to find political solutions or prepare military countermeasures.

Iran will highly probably continue to seek nuclear weapons and suitable long-range vectors for them.[5] If this is accompanied by moves for Iranian hegemony in the region, threats may also arise for Europe, and the community of states may need to intervene to restore international order.

Pakistan, in contrast, has been a nuclear power since 1998. Its arsenal is estimated at about 60 atomic warheads. In addition satellite photographs of a nuclear installation under construction in Kushab indicate that in future the country will be capable of

1 "Missile defence" covers the terms *Flugkörperabwehr* used in German military circles and *Raketenabwehr* used in the public debate, which are used essentially synonymous in this research paper.

2 It is only in combination with weapons of mass destruction that vectors become an unpredictable risk. A ballistic missile with a conventional warhead, on the other hand, is an ordinary bomb—with a greater range, admittedly, but of only limited effectiveness.

3 The deployment location of mobile missile systems is more difficult to determine than that of fixed systems. This makes military countermeasures more difficult. In modernizing its intercontinental missiles, Russia is giving the most important place to the mobile version of the Topol-M.

4 Resolution 1747 of the UN Security Council, dated 24 March 2007.

5 Sascha Lange and Oliver Thränert, *Raketenabwehr in und für Europa* (Missile defence in and for Europe), Berlin: Stiftung Wissenschaft und Politik, March 2007 (SWP-Aktuell 20/07), pp. 1–3.

producing plutonium for 40 to 50 new warheads per year in a heavy-water reactor located there.[6] The Islamabad regime considers the possession of atomic weapons an essential foundation of national security and a core element of state identity. It is therefore pressing energetically forward with the development and modernization of nuclear warheads and their vectors. The latest middle-range missile, the Shaheen-2, has a solid-fuel motor and an estimated range of 2000 to 2500 kilometres. A carrier vehicle gives it mobility. It is in an advanced stage of development, and can be assumed to be ready for service soon. In February 2007 it successfully covered a distance of 2000 kilometres.[7] Thus Germany, which is more than 5000 kilometres away from Pakistan, lies far outside the current range of Pakistani missiles. On the other hand the area threatened by the Shaheen-2 is progressively approaching the east of Turkey, which is about 2500 kilometres away.

Pakistan also has the intensive support of China to thank for both the nuclear programme itself and the progress with middle-range missiles. The two states have friendly relations and both consider India a threat to their security.

Pakistan's geostrategic situation involves many risks. After the attacks on the World Trade Centre the country became an important ally of the USA in the fight against international terrorism, partly under strong external political pressure. Since the nuclear agreement between India and the USA in March 2006, however, the government in Islamabad feels let down by its most important Western ally. An additional problem is that the US government intends to invite representatives of the Indian government to attend a missile defence simulation exercise as part of a fact-finding visit.[8] If India should take steps to create its own missile defence shield, this would considerably reduce the effectiveness of Pakistan's deterrence.

Pakistan must also fear regional isolation. The country observes India's intensive involvement in Afghanistan with great unease. Islamabad would see a neighbour to the west under Indian influence as a threat. Furthermore the internal political situation is unstable. Obscure power structures in the political institutions, the military and the secret service are worrying, as it is not clear who will control Pakistan's nuclear potential in future. For the foreseeable future it cannot be excluded that the situation in Pakistan detrimentally affect the deployment of NATO in Afghanistan, or that conflict will flare up with India which is an important cooperation partner for Europe.

A possible threat from North Korea is of less relevance for Europe at the moment. Pyongyang's efforts to arm itself are considered rather to be focused on Japan or the United States. Estimates of the range of the Taepodong-2, which is still at the development stage, are highly variable, from 6000 to 9000 kilometres. Germany is some 8000 kilometres from North Korea. But there are signs of a diplomatic solution of the conflict over the North Korean atomic programme. If that should happen the potential threat from the country could be considerably reduced, all the more so if the desperate economic situation there gets worse.[9] However it must be supposed that we are still a long way from a complete renunciation of nuclear weapons by North Korea.[10]

In general the Federal government and NATO should not narrow their field of vision needlessly by only considering a few risks nations. The American government's concentration on Tehran and Pyongyang is shortsighted. For if missile defence is only justified by the aggressive armaments efforts of Iran, Pakistan and North Korea, it could also be rendered obsolete by positive internal political developments in these countries. If there is no credible deterrent, however, the proliferation of technology and the possession of offensive long-range ballistic missiles will remain unvaryingly attractive for many nations—including some on the periphery of Europe.

The argument of critics in Germany that there are no risks and threats which currently justify the construction of a missile defence system architecture can hardly be contradicted from today's viewpoint. In spite of intensive diplomatic efforts, however, the outbreak of military conflicts in the Near and Middle

6 Elaine M. Grossman, "US Central Command Expects Nuclear Restraint from Pakistan," *Global Security Newswire*, August 6, 2007, www.nti.org/d_newswire/issues/2007/8/6/22185C5C-993C-4684-A3CE-9EDC068558F6.html.

7 Hans M. Kristensen and Robert S. Norris, "Pakistan's Nuclear Forces," *Bulletin of the Atomic Scientists*, Vol. 63, No. 3, May/June 2007, pp. 71–73.

8 Missile Defence Agency, *Fiscal Year 2008 (FY 08) Budget Estimates Overview*, Washington, D.C.: Department of Defence, January 31, 2007, p. 14.

9 Roland Hiemann and Oliver Thränert, *Der weite Weg zur nuklearen Abrüstung* (The long road to nuclear disarmament), Berlin: Stiftung Wissenschaft und Politik, March 2007 (SWP-Aktuell 18/07), pp. 1–2.

10 Roland Hiemann, *Nordkorea rüstet ab—wirklich?* (North Korea is disarming—really?), Berlin: Stiftung Wissenschaft und Politik, October 2007 (SWP-Aktuell 53/07), pp. 3ff.

East which also involve NATO member states cannot be excluded. Now it is a principle of German foreign policy to seek to resolve any conflict by negotiations as far as is possible. But credible political pressure can only be exerted if it is backed up by military capabilities which deter a potential adversary. Because it lacks its own capabilities, Germany relies on the protection of the US nuclear deterrent. This system has been exceedingly successful up till now, ensuring stability over a long phase of history. It is true that Iran with nuclear weapons should be easier to deter than militant Islamists who gain the use of Pakistani nuclear weapons. If the international community nevertheless had to take military action against Iran this would certainly bring emphatic demands for the active military involvement of Germany. For example, Israel might request German military support as a consequence of a military conflict with Syria or Iran, thus putting the Federal government under considerable pressure. Both in the NATO Response Force (NRF) and the European Union (EU Battle Groups) Germany provides considerable portions of the rapid response forces. That these troops must be protected from ballistic missiles is obvious and largely uncontested.

If a state against which the international community is obliged to intervene should be able to threaten the Federal Republic with weapons of mass destruction, the strategic situation would be drastically altered. Military interventions against such a country would be excluded in principle. In this way states which possessed such weapons would achieve their goals, and furthermore it would seem very attractive for others to gain the status of nuclear powers. If the Federal Republic wishes to retain its freedom of action in foreign policy and not to become vulnerable to political blackmail even without the express threat of intervention, it must convincingly demonstrate to a potential adversary that its military intentions would fail. This is just the function of a shield for missile defence.

US Plans and the Consequences for NATO

The USA considers Iran and North Korea, apart from the non-state actors of international terrorism, to be the main threat to national and international security.[11] Besides their deepest concern—after the trauma of 11 September 2001—to guarantee the protection of American territory, a further goal has the highest priority. Behind the planned complex for defence against ballistic missiles lies also the strategic calculation that this will allow them to maintain the system of collective security by military means—even against the resistance of states which possess weapons of mass destruction and long-range missiles. Military action against a state which could credibly threaten the USA or one of its allies with a nuclear response would bring high risks for security. For many years there was no means of defence against ballistic missiles. This is one of the reasons why many nations want to belong to the group of nuclear powers with long-range missiles. If American plans to create an effective missile defence screen are realized it would not only be the prospect of a successful military retaliation by these states which would be seriously reduced. The significance of nuclear weapons as a status symbol and an instrument of power in international politics could then be diminished. "Missile defence systems would thus once again make deterrence against a potential aggressor as effective as it was before he acquired missiles and atomic weapons."[12] The core American goal is thus to retain a broad spectrum of options for themselves in the Near and Middle East, including the deployment of military forces. Against Iran the USA is pursuing the strategy of building up a countervailing power—with their own military capabilities and allies in the region. They have already stationed Patriot systems for missile defence in Saudi Arabia, Kuwait and Qatar.[13]

The US missile defence system is spread worldwide. There are already cooperation agreements with Australia, Japan, Israel, Great Britain and Denmark.[14] In this way the United States is creating facts on the ground. The high investments and rapid development tempo demonstrate the will to make the system speedily ready for deployment and the optimism that

11 "The National Security Strategy of the United States of America," Washington, D.C., March 2007, pp. 23–26.

12 (Translation of) Oliver Thränert, *Die Verbreitung von Raketen und Marschflugkörpern* (The proliferation of ballistic and cruise missiles), Berlin: Stiftung Wissenschaft und Politik, July 2005 (SWP-Studie 15/05), p. 29.

13 Peter Rudolf, *Die Iran-Politik der Bush-Administration* (The Iran policy of the Bush administration), Berlin: Stiftung Wissenschaft und Politik, April 2007 (SWP-Aktuell 25/07), p. 4.

14 In Great Britain (Fylingdales) and Denmark (Thule) there are US radar systems which were already in use in the Cold War and are now being modernized. Respectively by the end of 2007 (Fylingdales) and 2008 (Thule) they should have been renovated to such an extent that they can be integrated in the defence system.

this can be achieved. With the planned stationing of 10 ground-based interceptors (GBIs) in Poland and the radar installation in the Czech republic the USA is following four goals. Firstly they can thereby protect the important radar sensors in Europe, the "eyes" of the system. Secondly, with the capability to intercept attacks at an early stage they are also increasing the chance of combating a missile aimed at North America. Thirdly, in this way the USA can better protect their European allies. Fourthly, Washington expects to obtain greater legitimacy for its policy if it involves partners in the programme.[15]

The missile defence system is still in the testing and buildup phase. As costly technologies require several years until they reach operational maturity, the programme is designed to be long-term and modular. Since 2002 enormous progress has occurred in the USA in this field, however. Thus the number of military experts and scientists who believe that the US plans are technically feasible is multiplying.

If the United States receive no positive signal from NATO, they will continue their programme bilaterally as they have done so far. The beginning of negotiations with Warsaw and Prague has led to considerable tensions in the North Atlantic Council. If there is no agreement with the Czech Republic and Poland, the USA will seek alternative options. Great Britain could well accept the stationing of a GBI facility. In this way NATO would in the long-term rob itself of the possibility of setting up a fixed missile defence structure with intensive use of American capabilities. The existing scepticism of the USA towards an organization in which every decision requires the agreement of 26 nations would increase, and the capability of the alliance to act would be tested. A central aspect of the transatlantic security architecture would be dealt with outside the alliance instead of inside it. This would run seriously against German security interests.

In spite of all efforts to develop the European security and defence policy (ESDP) the transatlantic alliance and the partnership with the USA will continue to be the foundations of German foreign and security policy. But the question arises whether NATO can continue to satisfy the security requirements of its members in the future or will be marginalized as a transatlantic discussion forum. Involvement of NATO in a missile defence programme would have great military and technological importance.

Russia's Role in the Debate

Moscow's severe criticism of the American plans hides a primarily political calculation. For the world public the Putin administration portrays the bogey of a Russia threatened by the USA and practically forced to take countermeasures. This exaggerated picture raises memories of the Cold War time, particularly in the Federal Republic. At that time excessive provocation of the Soviet Union could have ended in a military catastrophe on German soil. In addition many critics fear that it will come to a new arms race. Russia must have expected or even intended these reactions. Putin is obviously trying to impute aggressive action to the USA in order to legitimize the modernization of the Russian forces in the eyes of international public opinion, even though it was started long before the debate over missile defence began.

The Russian defence budget has quadrupled since 2001. It seems that beside economic strength Russia sees military power as an important pillar of the great power status which it is once again claiming—even if the terrible condition of its conventional forces means that the country will not soon be able to exercise significant military power outside its territory again. On the other hand the modernization of the strategic nuclear weapons began some time ago. This makes it certain that in the long term Russia will have sufficient missiles and warheads to threaten the USA. Furthermore, the American interceptor missiles planned for stationing in Poland will hardly affect the nuclear deterrence capability of Russia. For only a few of the theoretical trajectories which Russian intercontinental missiles could take to attack North America pass over Europe. Finally, in this field the Russian military have access to highly-developed technologies such as multiple warheads, decoys and a new manoeuvrable warhead. Just at the beginning of 2007 the commander of the strategic missile troops, General Nikolai Solovzov, stated that US systems were not in a position to intercept Russian intercontinental missiles.

The core of Russia's concerns are not about missile defence. Moscow felt the extension of NATO to the east and NATO's intervention in the 1999 Kosovo war to be major provocations. Now Russia wants to prevent a further extension of the US and/or NATO military infrastructure as well as any new states joining the

15 Missile Defence Agency, *Fiscal Year 2008 (FY 08) Budget Estimates Overview* [as Footnote 8].

transatlantic alliance.[16] In the German and European interest NATO should find a missile defence solution which Russia can also accept. But this should in no way be the result of an unyielding Russian position or blackmail by Moscow.

The latest contacts between Moscow and Washington are indeed a positive sign; whether they will lead to constructive cooperation remains to be seen. Putin's offer to allow NATO to use a Russian radar facility in Azerbaijan is rather a clever ploy than a real option, and probably only part of delaying tactics intended to torpedo the American plans or to encourage the USA to involve Russia more deeply in planning.[17] However it seems that both sides are working to limit damage and de-escalate the argument. In any case Washington has regularly kept Moscow informed about its aims and activities in the last years—even in the field of missile defence. Recently the US government made Russia a significant offer of cooperation. It offered Moscow joint threat analysis and technological linking of the Russian components for data exchange. In addition it intends to allow Russia to send liaison officers to the planned stations in Poland and the Czech Republic.[18] Now it is up to the Kremlin to take a step towards the USA.

Following on the formation of the NATO-Russia Council, in 2002 a joint working group was also set up on force protection in areas of deployment (Theatre Missile Defence, TMD). Since 2004 computer simulations on the joint operation of command posts have been held in the USA, the Netherlands and Russia; this autumn Germany should be the host. So far no exercises have been held which include the operation of weapon systems, nor is this planned for the near future. Progress in cooperation is thus slow. Considerable differences of technology and system components make the electronic netting of the partners difficult. In the area of operational procedures cooperation is also complicated because of differing military philosophies. An important motivation for Russia to take part in such exercises seems to be to gain access to Western technology. Thus NATO member states—especially the USA—are acting cautiously, partly because of the Russian arms deals with Iran, Syria, the Sudan and Venezuela.[19] Thus cooperation on the TMD programme is more a political mechanism than a fruitful military collaboration. TMD is the only remaining forum for joint activity between NATO and Russia. In particular on Moscow's side its development depends constantly on the general political weather.

Apart from this the construction of a missile defence for Europe involving serious confrontation with Russia cannot be in the German interest. For Germany relies on Russia as an important factor for stability in Eastern Europe, the Caucasus and Central Asia. Of course NATO must put its own security requirements ahead of the sensitivities of the Russian government, but nevertheless it should act with the greatest possible transparency and—so far as is compatible with military capability for action—involve Russia in the planning. Germany could have an exposed position on this point without disavowing transatlantic solidarity. The key to success must be not to overestimate the possibilities for this cooperation nor to set the goals too high. It would be unrealistic to attempt to incorporate Russia in the NATO command structure or to exchange technology. On the other hand, NATO should attempt to expand the reservoir of common interest and to reach out a hand to the east in the matter of missile defence.

The Motives of the Czech Republic and Poland

Officially the Polish and Czech governments portray the stationing of elements of the US system in Europe as important for the further integration of NATO. In fact both countries—in view of their current security interests—wish to cooperate more closely with the United States. The situation is comparable to that of Germany in the Cold War. They see the presence of American troops and facilities on their territory as a guarantee that in case of crisis developments the USA

16 Hannes Adomeit and Alexander Bitter, *Russland und die Raketenabwehr* (Russia and missile defence), Berlin: Stiftung Wissenschaft und Politik, April 2007 (SWP-Aktuell 23/07), pp. 1–7.

17 The radar system in Gabala (Azerbaijan) is part of the Russian early warning system. It can detect and track missiles in flight. However it lacks the additional capability, planned for the radar in the Czech Republic, of guiding interceptors to their target (fire control). At most this option would be an extension of the system, but not an alternative to the planned installation in the Czech Republic.

18 Judy Dempsey, "US Offers Russia Significant New Concessions to Gain Support for Missile Shield," *International Herald Tribune*, October 20, 2007.

19 Russia has delivered 29 TOR-M1 air defence missile systems to Iran in 2006, 5 MiG-31E combat planes to Syria since 2007, 12 MiG-29 combat planes to the Sudan in 2004 and 24 Su-30 MK2 combat planes to Venezuela since 2006.

would intervene in support. In addition Poland wishes to modernize its forces with American help.[20] Finally, both countries remain deeply sceptical with regard to Russia. However, such mistrust in no way characterizes only the new members of the transatlantic alliance. Similar attitudes can be observed in Norway.[21] The closer a NATO country is to Russia geographically, the more critically it views Russian foreign policy and internal political developments. To support the construction of a missile defence system purely because the governments in Warsaw and Prague seriously distrust Moscow would however harden the Russian position and thus be counter-productive.

As their behaviour shows, the new members of NATO are often not sensitive to the fact that confrontational behaviour or trials of strength with Russia are not in the interest of the transatlantic alliance. Thus the actions of Poland and the Czech Republic have aroused serious criticism within the alliance and annoyed established members. However, both governments seem to enjoy the exposed positions which their negotiations with the USA have brought them. In contrast the other European members of the alliance take the view that this bilateral procedure is damaging the interests of Europe. The older transatlanticists are hoping that the Polish and Czech partners will show greater alliance solidarity and use more measured tones in the debate about a European component for missile defence.

20 Poland and the USA have concluded an agreement for the delivery of 48 F-16 fighters. The first of these was supplied in November 2006. Poland has also expressed interest in the Patriot air defence missile system.

21 Siegfried Thielbeer, "Norwegens Militär zweifelt an Nato-Hilfe gegen Russland—Geheimbericht des Oberbefehlshabers veröffentlicht" (Norway's military doubt NATO help against Russia—secret high command report published), *Frankfurter Allgemeine Zeitung*, September 25, 2007, p. 2.

Missiles and Missile Defence

Missile Flight Phases

The USA divides the trajectory of a ballistic missile into three phases. In the *boost phase* the missile rises and is accelerated by the motor. Because of the great heat which is given off as the fuel burns, at this stage the vectors can very easily be located by infrared sensors (for example, mounted on satellites). Specific infrared signatures even make it possible to identify the type of missile. This information, which allows conclusions about flight and range parameters, is of great importance for interception. Depending on the motor power and duration of combustion this boost phase lasts from three to five minutes.

In the *mid-course phase* the missile is no longer being accelerated. The warhead has now separated from the booster stages. It follows a ballistic trajectory at an altitude of several hundred kilometres. Depending on the range this phase can last longer than 20 minutes. It does offer the largest time window for countering the attack. As the missile is moving at enormous speed (possibly more than 26,000 km/h), however, interception in this phase is technically very tricky.

During the final descent in the *terminal phase*, which lasts a minute at most, at about 100 kilometres altitude the warhead returns to the aerial envelope of the earth. This moment is generally designated reentry into the earth's atmosphere. Here it is friction which generates great heat, which produces intense infrared radiation.

Decoys and Manoeuvrable Warheads

States with highly-developed missile technology dispose of elements which make systems unpredictable in the face of countermeasures. As well as the actual warhead there may be decoys. In this case, in the mid-course phase the carrier missile releases other bodies as well as the true warhead. The difficulty for missile defence is then to identify the real weapon among several objects. So long as the objects are in space[22] their flight behaviours cannot be distinguished on the basis of physical characteristics. It is only in the terminal phase—when entering the earth's atmosphere—that a warhead moves at higher velocity and exhibits different flight characteristics from a decoy, because its mass is different. The USA is working on the ability to recognize the actual warhead early, in the mid-course phase, with the help of an infrared sensor. As decoys may have varying surfaces and thus different infrared characteristics, unambiguous identification is nevertheless extremely difficult. Decoys whose shape, mass and infrared signature are similar to those of the warhead cannot be distinguished from the latter, and must also be countered to minimize the risk that the actual warhead gets through. Thus part of the US programme is a defensive system with several destructive heads (multiple kill vehicle). It should be capable of intercepting several warheads or decoys in the mid-course phase, and be available for operational use in 2013.[23]

Table 1
Typical trajectory data for ballistic missiles with differing ranges

Range	*3000 km*	*4300 km*	*10000 km*
Maximum altitude	620 km	820 km	1070 km
Maximum velocity	4700 m/s	5600 m/s	7300 m/s
Time of flight	15 min 40 s	19 min 50 s	32 min 50 s

Source: Federal Ministry of Defence.

Another way to protect a warhead from interceptor systems is to make it manoeuvrable. This is done with an additional motor system which allows it to leave the ballistic trajectory. The Igla warhead developed by

22 There are various definitions of where space begins. Usually the Karman line at the altitude of 100 kilometres is taken to be the boundary (Fédération Aéronautique Internationale, *Sporting Code—Section 8—Astronautics*, Lausanne, April 25, 2003, p. 7). According to the US military space begins somewhat lower, at an altitude of about 80 kilometres (Dennis Jenkins, "A Word about Definition of Space," *The X-Press*, October 21, 2005, www.nasa.gov/centers/dryden/news/X-Press/stories/2005/102105_Wings.html).

23 Missile Defense Agency, *Multiple Kill Vehicle Test Successful*, Washington, D.C.: Department of Defense, July 19, 2006, www.mda.mil/mdalink/pdf/06fyi0080.pdf.

Russia, for example, is intended to vary its altitude and direction of flight by manoeuvring, thus defeating any defensive system.[24]

On the other hand China does have the technology to equip missiles with multiple warheads, but according to US information does not yet use it. The latest Chinese long-range missiles of types DF-31 (estimated range 8,000 km) and DF-31A (12,000 km) are however equipped with decoys. They are expected to come into service this decade. Nothing is known of any manoeuvrable Chinese warhead.[25]

At this time neither Pakistan nor Iran possess manoeuvrable, multiple or decoy warheads.

Basics of Missile Defence

Systems for intercepting ballistic missiles consist of three components. Sensors such as land-based or sea-based radars or satellites detect the launching of a missile and track its trajectory. On the basis of the flight path data thus obtained, a possible interception point can be calculated. In addition, the radar information can also be transmitted directly to an interceptor missile, which is thus continuously supplied with information about its target during flight. The second component is the effector, the actual killer which destroys the attacking missile. This is usually a missile system. The USA is also developing a high-powered laser to be mounted on a Boeing 747-type aircraft in order to negate the attacking missile during its boost phase.[26] Because of the varying duration and characteristics of the flight phases, various sensors and effectors are required. These must be connected together to form a system for timely data exchange which will allow a successful attack on the missile in any phase. There must also be command centres equipped for suitable processing in which the information is merged and decisions are taken about the use of the missile defence system.

24 Hans M. Kristensen and Robert S. Norris, "Russian Nuclear Forces 2006," *Bulletin of the Atomic Scientists*, Vol. 62, No. 2, March/April 2006, p. 64.

25 Hans M. Kristensen and Robert S. Norris, "Chinese Nuclear Forces, 2006," *Bulletin of the Atomic Scientists*, Vol. 62, No. 3, May/June 2006, pp. 60–61.

26 Systems for countering ballistic missiles in the boost phase must be stationed close to the potential launch location. The US components intended for this purpose, the kinetic energy interceptor and airborne laser, are only at an early stage of development. They are therefore of no importance for the impending NATO decision.

In general it is best to intercept a missile at the earliest possible time. Firstly, because an attack on the boost phase will take place in the airspace of the state which has launched the missile. That state will then be directly touched by the consequences of destruction—for example falling debris or the spread of substances. Secondly, because it is important to keep further options for the use of interceptors open in case the first attempt fails. Attacking missiles during the extremely short final phase over the target area should remain the exception. From the military viewpoint the best solution would be to destroy the missile or its launcher even before it is fired, perhaps using a cruise missile. However such action would be problematic on grounds of international law. In addition it would require very highly-quality and reliable intelligence round the clock.

This is exactly the problem of states which do not have missile defence capabilities. In case of a conflict they are practically forced to destroy the offensive ballistic vectors of the opponent while they are still on the ground. This in turn increases the pressure on opponents to actually use such missiles and to reduce the time between warning of an attack and the actual firing to a minimum. Rapid intensification and escalation of the conflict would be the result.

In NATO missile systems for missile defence are divided into two classes. Systems which intercept at an altitude of more than 35 km belong to the upper interception layer, and other systems to the lower layer. The latter serve to combat a missile in its terminal phase.

The German press has published detailed discussion of what consequences falling debris and the so-called nuclear electromagnetic pulse (NEMP) might have. Fundamentally ballistic missiles should be intercepted at the highest possible altitude. In that case the debris would burn up on reentry into the atmosphere. This is another reason why the USA wishes to acquire the capability to intercept missiles in the mid-course phase in space. For action within the atmosphere would cause debris to fall to the earth's surface. As pieces would be moving at considerable horizontal speed until they hit the earth, it would hardly be possible to calculate their point of impact.

Still more complicated is the question of whether a nuclear warhead detonates if it is hit with high kinetic energy. Several investigations came to the conclusion that many types of warhead would detonate, whereas others would simply disintegrate into pieces. A completely reliable answer cannot be given. If the nuclear

warhead should explode, there would be a nuclear electromagnetic pulse. The consequences which this would have depend materially on whether the pulse occurs outside the atmosphere (exoatmospheric NEMP) or within it (endoatmospheric NEMP). In the case of a nuclear weapon detonation outside the atmosphere, depending on the height of the explosion the NEMP would produce an electromagnetic field of greater or lesser magnitude at the earth's surface. The general effects of a nuclear explosion within the atmosphere, such as pressure, heat and radiation, would however practically no longer be detectable at the earth's surface. Both kinds of NEMP could in particular severely affect or even destroy communication systems. As the energy supply depends strongly on communications and information processing, it would also suffer badly from an NEMP.[27] The Federal government has commissioned further investigations of these problems and the consequences of falling debris. Results are expected by the end of 2007.

NATO will also discuss these questions intensively over the coming months. It is indeed important and desirable to be aware of the dangers of defensive action before one decides for or against a missile defence system. But it is questionable whether the results of this discussion should lead to rejection of such a system. All conceivable scenarios for the consequences of falling debris and an NEMP must assume that this is the result of an attack with ballistic missiles on Europe or North America. If these missiles should reach their targets, the damage to be feared would be considerably greater than that arising from the defensive action.

27 Federal Office for Protection of the Population and Catastrophe Aid, Report on possible dangers to the population from major catastrophes and in case of defensive action, in: *Zivilschutzforschung*, Bonn, March 2006 (Schriftenreihe der Schutzkommission beim Bundesminister des Innern, Neue Folge, Vol. 59), p. 30

Transatlantic Missile Defence—Where Does NATO Stand Today?

In its 1999 strategic concept NATO designated weapons of mass destruction in combination with their vectors as a threat to the territory of the alliance, its inhabitants and the armed forces of the member states. It therefore decided to increase capabilities in the field of missile defence.[28] At the Prague Summit in November 2002 the NATO member states agreed to commission a feasibility study on the protection of the alliance's territory, centres of high population density and the armed forces from ballistic missiles.[29] Four years later, at the Riga Summit, they discussed the results of the study and commissioned further investigations of the system architecture, command procedure, financing and the consequences of falling debris or a nuclear explosion at high altitude. The question of technical feasibility has increasingly been replaced by political and military aspects.[30] Current priorities for NATO are the practical formation of a possible missile defence and the possible legal, military and political consequences of the use of interception systems.

The American Offer to NATO

To be able to intercept missiles from the Near and Middle East at an early point in the mid-course phase, the USA must be able to station missiles in Europe. Missiles aimed at North America from Iran would cross Europe in a band ranging from Italy to Poland depending on their launching point and target. When missiles are fired westwards the rotation of the earth reduces their range. This is because the earth turns to the east and thus initially produces an acceleration in the opposite direction to the trajectory. As the speed of the earth's rotation decreases from the equator towards the north, launching a missile from a more northerly point increases its westwards range. For this reason Iran is erecting its silos for surface-to-surface missiles in the north of the country. This physical characteristic is also the reason why the United States plan to station 10 GBI missiles in Poland.[31] The radar station which the Americans plan in the Czech Republic would then have the task of detecting incoming missiles, tracking them and guiding GBIs stationed on Polish territory to their targets. In any case the Polish location has the primary advantage that it is suitable for shooting down both missiles aimed at the USA from the Near and Middle East and those aimed at large parts of Europe. If it was purely a matter of protecting Europe it would be better to station the defensive missiles further to the south-east.

The system planned in Poland, consisting of rocket booster stages and an effector, should be capable of intercepting intercontinental missiles at several hundred kilometres altitude during the mid-course phase. The effector is a manoeuvrable exoatmospheric kill vehicle (EKV) which is intended to engage missiles moving at more than 26,000 km/h and destroy them by kinetic energy on impact. The EKV carries no warhead. The available indications of its weight vary between 63 and 75 kg.[32] Doubts about the technical feasibility of the American programme generally relate to this component. Indeed this form of defence is particularly complicated, for the reason that both the EKV and the attacking missile have very high velocities. Several tests in past years were failures.

28 North Atlantic Council, *The Alliance's Strategic Concept*, Approved by the Heads of State and Government Participating in the Meeting of the North Atlantic Council in Washington D.C. on 23rd and 24th April 1999, Washington, D.C., April 23 and 24, 1999, www.Nato.int/docu/pr/1999/p99-065e.htm.
29 North Atlantic Council, *Prague Summit Declaration*, Issued by the Heads of State and Government Participating in the Meeting of the North Atlantic Council in Prague on 21st November 2002, Prag, November 21, 2002, www.Nato.int/docu/pr/2002/p02-127e.htm.
30 David S. Yost, "Raketenabwehr auf der Tagesordnung der Nato" (Missile defence on NATO's agenda), *Nato Brief*, autumn 2006, www.Nato.int/docu/ review/2006/issue3/german/analysis1.html.

31 Waldemar Wolff, *Raketen und Raketenballistik* (Missiles and missile ballistics), Berlin: Militärverlag der Deutschen Demokratischen Republik, 1976, pp. 328–329.
32 Raytheon Company Missile Systems, *EKV/GMD—Exoatmospheric Kill Vehicle/Ground-based Midcourse Defense System*, Tucson, 2006, www.raytheon.com/products/stellent/groups/public/documents/content/cms01_055818.pdf; Missile Defense Agency, *Proposed U.S. Missile Defense Assets in Europe*, Washington, D.C., June 15, 2007 (07-MDA-2650), S. 3, www.mda.mil/mdalink/pdf/euroassets.pdf (download July 30, 2007).

Since then, however, the USA is reporting increasing success in tests. At this time the GBI system is not fully capable of operation. However, Washington seems convinced that it can overcome the difficulties. Today 21 of the 24 GBIs planned by the end of 2007 are already stationed in Alaska (Fort Greely) and California (Vandenberg Air Force Base).[33] If all goes as the US Administration wishes, between 2011 and 2013 ten interceptor missiles of this type will be installed in Poland. The offer to Europe is not conditional on paying part of the costs. The USA would be prepared to bear all the expenditure of some 4,000 million US dollars[34] for installing the facilities in the Czech Republic and Poland by itself.

When the debate about the American plans arose in Europe at the beginning of 2007, the USA began to canvass its European partners. In February the head of the American missile defence programme, Lieutenant-General Trey Obering, visited Berlin to explain the goals of the US project and seek European support. The website of the responsible departments includes information—written in English, Polish and Czech—which is directed at the Europeans and answers questions on the system.[35] According to the indications of the American government, stationing 10 GBIs in Poland would protect 75 percent of European territory. South-East Europe and Turkey would lie outside the protective shield. To respect the principle of the indivisible and equal security of the entire NATO territory, the alliance would however have to fill this gap. Not to protect these areas at all, or only to do so in case of ballistic missile alert, perhaps by moving defensive systems, would not be acceptable to the states concerned.

Europe joining a missile defence programme is therefore only possible if this problem is solved. NATO would thus also have to set up a permanent system architecture of sensors and effectors in the region concerned to combat ballistic missiles there.

The Active Layered Theatre Ballistic Missile Defence Programme (ALTBMD)

In parallel with the feasibility study, and separately from the current discussion, since 1998 NATO has been carrying forward the Active Layered Theatre Ballistic Missile Defence Programme (ALTBMD) for the protection of deployed troops.

The ALTBMD Programme is the outcome of the experience gained during the military intervention to free Kuwait in 1991. At that time Iraq employed surface-to-surface missiles against Israel and Saudi Arabia. The Iraqi Al Hussein short-range missiles were based on the Russian Scud-B missile. By reducing the payload Iraq was able to increase the range from 300 kilometres to more than 600 kilometres. The Baghdad regime had worked on this increase in order to be able to attack Tehran in the war with Iran (1980 to 1988). In the first Gulf War in 1991, Iraq fired 43 of these missiles at Saudi Arabia and 39 at Israel.[36] On 25 February 1991, 28 American soldiers were killed by a missile attack on the Saudi town of Dhahran. This could not be prevented by the Patriot missile defence system stationed before the town because of a software error.[37] In the 2003 Iraq war Iraqi missiles were also intercepted by Patriot.

The purpose of ALTBMD is to protect deployed troops against ballistic missiles with a maximum range of 3000 kilometres by active countermeasures in the upper and lower interception layers. After the end of the investigatory phase, in March 2005 the North Atlantic Council decided to put the programme into practice. In 2006, at the Riga Summit, NATO signed a first contract with a consortium of companies from the USA, Great Britain, France, Italy, the Netherlands and Germany for an amount of €75 million. The total estimated cost of the programme is some €800 million. All the 26 NATO member states are taking part in the financing. The size of the individual contributions is calculated using a cost-sharing formula. The German share of the total amount is about 18 percent.[38] ALTBMD is not a matter of designing new weapon systems. Instead components are to be devel-

33 Missile Defense Agency, *Fiscal Year 2008 (FY 08) Budget Estimates Overview* [as footnote 8], S. 6.
34 Steven A. Hildreth/Carl Ek, *Long Range Ballistic Missile Defense in Europe*, Congressional Research Service Report for Congress, Washington, D.C., July 25, 2007, p. 1, www.fas.org/sgp/crs/weapons/RL34051.pdf.
35 Department of State/Department of Defense, *Proposed U.S. Missile Defense Assets in Europe* [as footnote 32].
36 Website of the Missilethreat.com project of the Claremont Institute, Claremont, www.missilethreat.com/missilesoftheworld/id.14/missile_detail.asp.
37 United States General Accounting Office, *Report Number B-247094*, Washington, D.C., February 4, 1992, www.fas.org/spp/starwars/gao/im92026.htm.
38 Data according to the NATO Security Investment Programme.

oped, with which NATO can net together various existing and future systems.

Defence systems are basically limited by the range of their sensors and effectors. To extend the protected area several systems are usually combined to form a composite or federated system. As there is no system which provides optimal protection against the whole spectrum of threats, this interweaving serves to balance out weaknesses and missing capabilities of the individual weapon systems. The German air force was already using this principle in the past when it deployed a combination of Patriot, Hawk and Roland air defence systems, which possessed clearly different performance parameters.[39] ALTBMD is intended to provide this combination of different systems for missile defence in an international framework. For this purpose the sensors and effectors of several NATO member nations must be made mutually compatible with the help of a common electronic module. The goal is to exchange the data gathered by the sensors in order to obtain a comprehensive military situation picture. It does not matter at all which type of sensor the information comes from. The only important thing is that it is prepared, processed, merged and displayed on a screen. The module being developed in the framework of ALTBMD is in fact the software interface which links the different weapon systems together. This is necessary chiefly because in case of a ballistic missile attack the time for reaction is very short. By means of a comprehensive federation of sensors an attack is to be detected as early as possible so that it can be negated with a high probability of success.

From this arises a further task of ALTBMD: to control the operational combination. This means identifying and bringing into operation the most suitable of the different defence systems for the situation arising. Some NATO member states already have capabilities for defence against ballistic missiles. However these are mostly isolated solutions, which can only be netted efficiently together by ALTBMD.

As the result of the ALTBMD programme will be a control and information system, NATO is dependent on member states for making the sensors and interception systems available. So far the USA, the Netherlands, France, Great Britain, Spain, Italy, Poland, Greece and Germany have stated they are ready to do so. The European partners are contributing land and sea-based sensors and the Patriot, SAMP/T[40] and MEADS[41] weapon systems. These systems are also important components for combating aircraft, drones, helicopters and cruise missiles. In addition the Europeans are making available ships with the capability for missile defence. The European systems are only capable of combating missiles with a range of 1000 kilometres maximum. Even after the introduction of MEADS,[42] consequently, the European NATO states will only possess missile defence systems which can intercept attacks in the lower layer. There is thus a large gap in the system architecture as regards the interception of missiles in the upper layer with a range of up to 3000 kilometres. Only American systems can meet this deficit in the foreseeable future.

The US Contribution to ALTBMD

The United States are working intensively to develop the Terminal High Altitude Air Defence (THAAD) land-based mobile system. It is designed to intercept missiles in the upper interception layer at the transition from the mid-course phase to the terminal phase. According to official sources the system's interceptor missiles have a range of 200 kilometres and a maximum altitude of 150 kilometres. Admittedly documents from American military circles imply that THAAD can also be used against missiles with a range of up to 5,500 kilometres.[43] Consequently the capabilities of the missile may exceed the officially released parameters. THAAD is most effective if data from satellites are used as well as the information provided by the ground-based radar. Under missile attack this cueing can considerably enlarge the time window for a reaction. The satellites supply data coming from outside the range of the system, which cannot be acquired by the THAAD radar.[44]

39 Since the danger of an attack by aircraft had diminished, Hawk and Roland were taken out of service in 2005. They could not combat ballistic missiles.

40 *Sol-Air Moyenne Portée Terrestre*: cooperative venture between France and Italy.

41 Medium Extended Air Defence System: cooperative venture between Italy, Germany and the USA.

42 For 2016/2017 the Bundeswehr plans to bring into service a module consisting of three fire units.

43 Carlos Kingston, *THAAD Program Overview for the Small Business Day Conference*, Washington, D.C.: Missile Defense Agency, June 28, 2006, pp. 3–5, www.mdasmallbusiness.com/conference/download/2006presentations/06-MDA-1923%20Kingston.pdf.

44 Peter Sequard-Base, *Raketenabwehr. Bedrohung—Verteidigung. Eine physikalisch-technische Annäherung* (Missile defence. Threat—

In spite of many failures in the first test phases since 1995 the technical feasibility of the system is now beyond question. Several successful tests have shown that THAAD is sufficiently mature for service. In January, April and October 2007 the USA intercepted test missiles with a weapon system stationed on Kauai/Hawaii. The system was no longer being operated by development experts, but by soldiers of the American army.[45] The US armed forces aim to bring THAAD into operational service in 2009/2010. In December 2006 the American defence ministry ordered two fire units with 3 launcher devices and 24 interceptor missiles each from the manufacturer for a price of 619.2 million US dollars. The USA wish to rapidly achieve an initial capability with THAAD with delivery of the systems by September 2009.[46] In later routine operation a fire unit will comprise nine launchers each equipped with eight missiles.

The USA employs sea-based SM-3 (Standard Missile 3) interceptors launched from Aegis class ships. These ships act as platforms for long-range sensors and—in so far as they have already been suitably adapted—as launchers for the SM-3. The current mission of the SM-3 is to intercept missiles with a range of up to 3000 kilometres. It should however also be possible in the future to combat missiles with greater ranges. Whenever it is possible the ships are stationed in front of the respective areas which they protect. In this way they are closer to the location from which opposing missiles would be launched in case of an attack, giving them the chance to intercept these missiles in the mid-course phase. These ships, which are equipped with the appropriate detection and fire control systems, also have the task of identifying and tracking intercontinental missiles with more than 5500 kilometres range. The system can then relay the data acquired to the posts in Alaska and California where high-performance ground-based interception missiles (GBIs) are stationed.[47] The US Navy now disposes of 16 ships (three cruisers and 13 destroyers) equipped with the system. The cruisers and seven of the destroyers are also capable of firing SM-3 missiles. By 2009 in all 18 ships should dispose of both sensors and SM-3 effectors.[48]

Since 1999 Japan has partnered the USA in this programme. Tokyo also wishes to acquire SM-3 interceptor missiles. Four Japanese Kongo class destroyers[49] are already equipped with the Aegis system and intended for conversion as platforms for the SM-3. Japan made a request to the American government in this regard in June 2007. They are seeking a package which includes system adaptations and accessories and technical/ logistical support as well as nine SM-3 firing systems. If it comes about the sale will be worth 475 million US dollars.[50] It is highly probable that the USA will accede to the Japanese request. Because of the North Korean missile tests in recent years and Chinese rearmament activities, Japan is pushing energetically to improve its missile defence capabilities. At the moment the Japanese armed forces only possess the Patriot weapon system which offers protection in the lower interception layer. Patriot can protect troop concentrations and strategically important installations. However Japan will only acquire large-area protection with the option of combating missiles in the upper interception layer with the introduction of the SM-3.

The THAAD and SM-3 projects play an important part in the NATO ALTBMD programme. At first the United States refused to integrate systems for attacking missiles in the upper interception layer in the NATO plan. They have now changed their view and are prepared to include THAAD and SM-3 elements in ALTBMD. This is a very important step for the programme. It is only with the American components that NATO can form an efficient combined system. For it requires the support of the American DSP (Defence Support Program), SBIRS (Space-based Infrared System) and SPSS (Space Tracking and Surveillance System) satellites with their enormous detection ranges and of the Aegis class ships—which the Americans have also

defence. A physical and technical approach), Vienna 2003 (Schriftenreihe der Landesverteidigungsakademie—Studien und Berichte zur Sicherheits- und Verteidigungspolitik 01/2003), pp. 148–151.

45 Missile Defense Agency, *Successful Missile Defense Intercept Test Takes Place Near Hawaii*, Washington, D.C., October 27, 2007 (07-News-0049), www.mda.mil/mdalink/pdf/07news0049.pdf.

46 "THAAD: Reach Out and Touch Ballistic Missiles," *Defense Industry Daily*, July 15, 2007, www.defenseindustrydaily.com/thaad-reach-out-and-touch-ballistic-missiles-updated-02924/.

47 The USA wishes to station 10 of these missiles in Poland.

48 Missile Defense Agency, *Aegis Ballistic Missile Defense*, Fact Sheet 07-FS-0008, Washington, D.C., March 2007, www.mda.mil/mdalink/pdf/aegis.pdf.

49 In the next few years Japan wishes to bring two further destroyers of this class into service.

50 Defense Security Cooperation Agency, *Japan—SM-3 Block IA STANDARD Missiles*, Washington, D.C., June 8, 2007 (News Release 07-26), www.dsca.osd.mil/pressreleases/36-b/2007/Japan_07-26.pdf.

released for integration in ALTBMD—in order to detect ballistic missiles in the upper interception layer and

Table 2
Land-based missile defence systems in NATO member states

	Boost phase	*Mid-course phase*	*Terminal phase*
Upper interception layer (> 35 km)	*Kinetic Energy Interceptor* (USA)	*Ground-Based Interceptor*, GBI (USA) *Exoguard* (Design of EADS Astrium, *European Aeronautic Defence and Space Company*)	*Terminal High Altitude Area Defense*, THAAD (USA)
Lower interception layer (< 35 km)	Not applicable	Not applicable	*Medium Extended Air Defence System*, MEADS (Germany, Italy, USA) SAMP/T (France, Italy) *Patriot* (Germany, Greece, Netherlands, Spain, USA)

track them. Furthermore the USA may possibly also bring its airborne high-powered lasers into the ALTBMD system.

Intermediate Summary

If the European NATO allies decide to set up protection for their entire territory against ballistic missiles, in the medium term they must rely on the capabilities and technologies of the USA. In so doing it would be advisable to integrate together the components of the different existing programmes. The ALTBMD system, which is so far limited to the protection of troops in deployment, could be extended to the protection of the population and territory of NATO member states and form the basis of a missile defence system in Europe. From the European viewpoint the following reasons militate for using ALTBMD as the basis of a defence system for stationary permanent operation in Europe.

Firstly, current planning within NATO already involves integrating different systems. For this purpose nine NATO members are working together on building up a combination of sensors and effectors for the upper and lower detection layers. The fact that all 26 members are sharing in the programme makes it clear how important it is for the NATO countries.

Secondly, ALTBMD is also suitable because south-eastern Europe and Turkey—which lie closest to Iran and Pakistan—could be protected by its common shield. In this way NATO could make use of its own existing infrastructure which it would simply have to adapt for missile defence. The planned US components in Poland and the Czech Republic would also be integrated in the federated control and information system as part of a communication network. As the American programme contributes to the defence of the national security of the United States, Washington is admittedly not likely to allow the operation of the systems provided for Europe to fall entirely under NATO command.

Thirdly, the open architecture of ALTBMD would allow the defence system to be introduced progressively. The federated system could be built up in modules according to the financial circumstances and the development of the ballistic missile threat. The system would also remain open for participation by current or future NATO states. Interested countries which did not belong to the alliance could join NATO in the data exchange.

On the Road to Bucharest 2008: Alliance Policy Dimensions

Proposal for an Architecture for the NATO Missile Defence

One decisive advantage for NATO is that it possesses tried and tested international military structures and facilities. To protect European NATO airspace it has so far relied on the integrated air defence system. Since it was established, the alliance has been observing and assessing the situation in the airspace of European NATO territory in multinational Combined Air Operations Centres (CAOCs). In the event of violations of airspace, it orders fighter aircraft, via the CAOCs, to intercept the penetrating aircraft. To this end, the NATO Allies provide national command posts, radar sensors and fighter aircrew on alert who are permanently under alliance command.

In the course of restructuring, NATO will reduce the number of CAOCs from the current ten to four. In the future, only the Finderup (Denmark), Poggio Renatico (Italy), Larissa (Greece) and Uedem (Germany) sites will remain. For operations in the framework of the alliance's broader range of tasks, two deployable CAOCs will be kept ready in Uedem and Poggio Renatico. Although the current tasks of a static CAOC do not differ much from those it had to perform in the Cold War, the threat situation has changed considerably. Today the focus is no longer on the traditional military threat of air attack but rather on defending against the danger of terrorist attacks from the air. For such cases—known as renegades—there exist bilateral agreements that, under certain circumstances, enable the fighter aircraft of one State to undertake sovereign tasks in the airspace of another.

This could serve as a model for a NATO architecture for missile defence. If one considers the missile threat to be just one of a number of threats from the air, it would only be logical if the CAOC were to perform surveillance and take measures that fall within the scope of missile defence. Regional division would be superfluous in that case as, thanks to the range of the sensors and the technical equipment, all the data could be gathered in a single suitably adapted CAOC as a nodal point. NATO's future instrument for controlling air forces, the Air Command and Control System (ACCS), will also incorporate systems to defend against ballistic missiles. In such a concept, the ALTBMD module could play an important role, as it combines the various missile defence sensors and effectors for electronic data processing. This would only require a few additional workstations in any static CAOC. From there the air picture could be monitored and in the event of a ballistic missile attack the deployment of weapon systems could be coordinated.

A phased plan on NATO's part is conceivable. As the USA has set itself the target of having the defence site in Poland fully operational by 2013, that should also be the target for NATO. The highest priority would be to close the gaps in the protective shield in southeastern Europe and Turkey. In later phases, NATO could extend the system or integrate national elements. For the foreseeable future, however, it will not be possible to create a European missile defence system without American support. Even if there were a permanent NATO architecture, Europe would for the time being be reliant on US satellites and sea-based early warning systems. Furthermore there is currently no land-based alternative to the THAAD weapon system, which unlike MEADS of SAMP/T allows the defence of fairly large areas.[51]

To provide an effective defence shield in Europe as a complement to the American GBI system, which covers the terminal phase of the ballistic trajectory, about 15 THAAD systems would be required. To provide additional protection for Germany against missiles in the terminal phase, two to three firing units would be enough if there were pre-vectoring or cueing by satellite. Without that pre-vectoring the area of protection offered by THAAD is drastically reduced.[52] If the Europeans decide on this first option, they would have to rely completely on the American GBI system to cover the midcourse phase. For the 15 interceptor systems and their data linkage to the control system, NATO should reckon on 7.5 to 10 billion euros.[53] That

51 It is true that sea-based units using the SM-3 or a European equivalent still to be developed would also be conceivable. However, a permanent structure would require units permanently operating at sea, which would entail significantly higher procurement and operating costs than for land-based units.

52 Cf. Sequard-Base, *Raketenabwehr* [see footnote 44], pp. 91–93.

53 €500 to 650 million per THAAD system seems realistic. As the study is based entirely on publicly available sources and

assumes that the USA does not in addition ask Europe to pay towards the cost of the radar installation in the Czech Republic and the missile installation in Poland. That position could change, however, in the event of a change of administration in the United States. The technical conditions for integration of THAAD with the European components might be met from 2010 through the ALTBMD programme. In 2016 the project should be sufficiently developed to make it possible to link a CAOC adapted for missile defence to the planned US installations in the Czech Republic and Poland. In addition NATO would have to adapt the CAOC to the more capable C2BMC[54] command and control system used in the American programme. From the technical standpoint it would be entirely feasible to set up the THAAD interception shield—which should close the gaps in the American GBI system—at the same time as the US sites in the Czech Republic and Poland. This depends to a significant extent on financing issues and the delivery capabilities of US industry. In the interests of their own armaments industries, the European NATO States should also check whether there is a chance of producing elements of THAAD (under licence) in Europe. From the end of 2007 the Japanese firm Mitsubishi will be manufacturing the highly modern PAC-3 *(*Patriot Advanced Capability 3*)* under licence for missile defence with the Patriot system and the corresponding launchers. The US firm Raytheon supplies the radar components and control and communications equipment. This collaboration could serve as a model for future American-European cooperation.[55]

If 15 THAAD systems were stationed in Europe, a credible and capable protective shield for the terminal phase of the ballistic trajectory could be developed—as a complement to the American GBI shield. For high-altitude interception in the midcourse phase the European NATO Allies would in any case have to rely on the USA's readiness to deploy its GBIs stationed in Poland or elsewhere in Europe. Should the mood in the alliance not be in favour of reliance on an American protective shield, additional assets operated by the transatlantic alliance would be needed. In such an eventuality the USA might be disinclined to make a significant contribution to the funding. Instead, the Europeans could only hope that Washington would make its technolgoies and experience available. Conversely, the American administration is trying to get other nations to contribute at least indirectly to the considerable cost of its national programmes and to negotiate lucrative contracts for the US arms industry.

Embarking on countering ballistic missiles in the midcourse phase would therefore entail considerable expenditure for the European NATO States. It would be conceivable to position a NATO missile site and one or two multinationally operated sensors in southeastern Europe. Estimates assume a financial requirement of up to €8bn for such a system architecture—without the cost of THAAD and the early warning satellites. Yet protection would not be comprehensive, and NATO would have to accept some gaps. The protective shield would be focused exclusively on missiles from the Near and Middle East. Completing the system would require the construction of three or four additional sites with interceptor missiles and entail additional costs of about €12bn (see Table 3).[56]

At the present time the costs can only be roughly assessed. It is clear, however, that the resources required (excluding early warning satellites) double (Option 1) or triple (Option 2) if the Europeans turn down the Americans' offer.

Financial Burden-sharing

At the national political level and within the alliance framework, the issue of funding may be one of the main areas of dispute. Optimistic assessments which assume that the United States will bear the major burden for European missile defence are just as unhelpful as scenarios that reckon on costs amounting to €30-50bn. The central task of the NATO nations—protecting the alliance area and its inhabitants—must be weighed against the problems that the financing of the military equipment will undoubtedly bring. In this connection the USA thinks pragmatically. Just the direct costs caused by the 11 September 2001 attacks lie in the region of the high tens of billions. The consequences of a nuclear warhead striking an American city would be many times more devastating. In the view of the US Government, but also of many politi-

estimates are difficult to make, all the costs given here should be understood as rough estimates intended to give the reader only an impression of the scale of investments involved.

54 Command, Control, Battle Management, and Communications.

55 Wendell Minnick and Sam Jameson, "Japan Debates Preemptive Strike," *DefenseNews.com*, Tokyo, August 14, 2006, http://defensenews.com/story.php?F=2016893&C=airwar.

56 "Raketen-Abwehr: beschlossen," *Geopowers*, March 5, 2007, www.geopowers.com/Allianzen/NATO/akt_nat/akt_nat.html.

Table 3
Missile defence options for the European NATO Allies

	NATO Feasibility Study		*US offer*
	Option 1 (limited protection)	*Option 2 (comprehensive protection)*	
Interceptor missile sites	1	several	1 (Poland)
Radar sites	1–2	several	1 (Czech Republic)
Cost (excl. THAAD and satellites)	ca. €8bn	ca. €20bn	ca. €3bn (borne by the USA)
THAAD	€7.5–10bn	€7.5–10bn	€7.5–10bn
Total cost to NATO (excl. satellites)	ca. €15.5–18bn	€27.5–30bn	€7.5–10bn

cians in the Democrat camp, that experience justifies high spending on national defence and the missile defence programme.

While all NATO Allies are supporting the ALTBMD programme on the basis of a cost-sharing formula, some nations are making sensors and effectors available free of charge. However, this cannot be a solution for the development of a THAAD protective shield for the alliance's southeastern flank. The states affected would very probably refuse to bear the costs of new systems on their own. Instead, they will press for all the NATO member states who would benefit from the protection afforded by the American GBI installation in Europe to contribute to the funding. The subsequent operating costs, on the other hand, could be shared by all the NATO member states. A similar procedure has already been established with the AWACS unit.[57] 15 NATO members finance the operation of the 17 early warning aircraft stationed in Geilenkirchen. Those states (with the exception of contributor Luxembourg) also send personnel who work in the multinational unit.

Germany could stand up for a phased plan which the alliance would review at regular intervals and adapt to developments in those states that are or become a source of concern to the NATO members. Procuring the US THAAD system to protect those areas not yet covered by the American umbrella would be a first step and a clear signal to Washington. If the USA does not participate financially in the extension of the THAAD system—which is to be expected—the German share would probably amount to some 25% of the total cost, i.e. to about €1.9 to 2.5bn. In view of the considerable increase in defensive military capabilities, such a contribution would be entirely justifiable. Initially, Europe would rely heavily on the US interceptor missiles envisaged for Poland. This is not a cause for concern, however. It is completely unrealistic to imagine Europe becoming independent of the capabilities of the US in the missile defence field in the medium term.

Should the European alliance members not be able to agree on this minimum solution—extension of the THAAD system—because they would then become too dependent on the United States, one alternative to the US site in Poland would be a purely European site with interceptor missiles. This would involve additional costs for Germany amounting to at least €2bn. This scenario would, however, also offer considerable opportunities for those European firms with the technological capabilities to manufacture sea- and land-based interceptor missiles. The *Maxus* rocket developed by a German-Swedish consortium for civil research purposes makes the European potential in this area clear. Equipped with an American solid propellant motor, it can lift payloads of 780 kg to an altitude of over 700 km.[58] European industry could in addition develop early warning satellites and put them into orbit. But this would bring additional costs. With both steps, Europe would open the door wide to future military and technological capabilities. For at a later date the European NATO States could—after renewed analysis of the threats—consider developing the capabilities into a complete system architecture. It would then not be necessary to take a decision today on a complete system costing €40bn or more (including

57 Airborne Warning and Control System.

58 According to EADS, *Sounding Rockets for Weightless Experiments*, www.astrium.eads.net/families/access-to-space/launch_systems/sounding-rockets.

an early warning satellite system). Because it relies initially on the USA, the European component can be built up modularly. Both in the case of manufacture of US products under licence and through developing its own, as a high-technology country Germany would have a large share in the industrial business and would benefit directly from the investments.

Procedure for Use of the System

A new system will bring difficulties above all in the political arena, for example in settling the decision processes within the atlantic alliance. Short advance warning times before the launch of a ballistic missile and short flight times make lengthy political and military consultations impossible (see Table 1, p. 13). This constraint calls for tight structures and established procedures that must be decided on in the NATO framework. The biggest problem is that there may be no practiable solution unless the member States renounce a certain measure of sovereignty. In practice, a ballistic missile attack on a NATO State would be an attack on them all under Article 5 of the North Atlantic Treaty. Given the limited reaction time, it is however impossible to convene the North Atlantic Council or to leave it to individual nations to decide before taking defensive measures. Clear and strict decision processes would be absolutely essential.

The consequences of missile attacks or of countering them may be transnational and demand that the alliance act in unison. The problem of political legitimacy could be solved by analogy with the German law on the involvement of Parliament. If there is imminent danger, the Federal Government can deploy German armed forces abroad without receiving the prior approval of the Federal Parliament. That approval must however be sought without delay.[59] Presumably the North Atlantic Council would anyway meet directly after the use of a NATO missile defence system.

Even in the unlikely event of the system being used in error, the consequences would not be dramatic. For as it is a purely defensive system, this could not be considered a provocation of international scope. Because of the height which both THAAD and GBI missiles reach, they should burn up on reentering the atmosphere. Possible damage on the ground through debris from lower-layer interception missiles—such as Patriot or SAMP/T—could not be avoided, but should be clearly apparent, justifiable and reasonable in scope.

The decision to use the system should be taken at the level of NATO's operational headquarters, Allied Command Operations (ACO), which is commanded by the Supreme Allied Commander Europe (SACEUR).[60] This position is always occupied by an American four-star general whose deputy is a general of equivalent rank from the British armed forces. Politically it might be opportune to make the use of the weapon system conditional on the agreement of both generals, in order to involve an American and a European voice in the decision process. In reality, however, it would hardly be practicable to rely on dual approval. As soon as information on a missile launch came in, the CAOC would urgently assess the situation. If it could be an attack on NATO territory, the CAOC would have to inform SACEUR immediately. The latter could only make a decision on the basis of a well-founded situation picture excluding errors as far as possible. It is true that this procedure takes a little time, but thanks to modern communication systems such a picture can be reproduced anywhere in the world at any moment. If the deputy had to be informed in parallel, it would additionally be necessary for both generals to agree and make a joint decision. There would not really be time for this additional step, particularly because action should be taken at the earliest possible point on the trajectory.

Of course NATO should basically be prepared for a surprise missile attack in any case. When a political crisis develops, however, the risk increases considerably. Military interventions by the West in particular make such an attack more probable. To demonstrate its resolve to act, NATO should therefore intensify surveillance and intelligence-gathering and raise the alert state during crisis situations. In addition greater awareness would then be required of the decision-makers in the transatlantic alliance.

Germany and its European partners could exert advance influence on the procedures and decision-making processes if they drew up unequivocal criteria for the use of a missile defence system. Clear rules and

59 *Gesetz über die parlamentarische Beteiligung bei der Entscheidung über den Einsatz bewaffneter Streitkräfte im Ausland (Parlamentsbeteiligungsgesetz)* (Law on parliamentary participation in decisions on the deployment of armed forces abroad), Paragraph 5, Berlin, March 18, 2005.

60 This designation is confusing, as SACEUR now commands NATO operations worldwide. Originally his area of responsibility was restricted to Europe. As the title SACEUR is used in numerous Alliance agreements and similar documents, it has been retained.

procedures would mean the greatest possible certainty of action for all involved and security guarantees for the nations. In this way, the person ordering the use of the system would be given precisely established decision-making criteria. Both for the USA and for the Europeans it might be helpful to tie in SACEUR as, besides his role within NATO, he also commands the United States European Command (USEUCOM) in Stuttgart and thereby, having a national command, is also a high-ranking representative of the Pentagon. The situation information would be evaluated in a multinational command post. As the information and recommendations for action would also be prepared there, involvement of the Europeans would be assured. The aim should therefore be an agreement governing how far the NATO system relies on US national components and what guarantees Washington gives for the protection of European territory. In view of the system's complexity, NATO should moreover consult EU members that do not belong to the transatlantic alliance and neutral states at an early stage, as they might well be affected by the consequences of using the system. In this context, Germany should propose the creation of a missile defence planning group as a further organ of NATO in addition to the North Atlantic Council, the Defence Planning Committee and the Nuclear Planning Group.

Proposal: Creation of a Missile Defence Planning Group

The highest organ of NATO is the North Atlantic Council, which regularly meets at the level of heads of government and of foreign or defence ministers. The latter also meet turn and turn about in the Defence Planning Committee and the Nuclear Planning Group, where they discuss political questions relating to the nuclear forces. NATO could set up an additional forum on missile defence, which would deal with the political, legal, economic and technological aspects of combating ballistic missiles. Because of the great importance of this complex subject for the strategic orientation of the alliance, consultation at this high level would be a considerable advantage. By analogy with the Nuclear Planning Group, in this body the foreign and defence ministers of NATO countries could debate topics such as stationing locations, communication and information systems, decision-making procedures and questions of arms control and the proliferation of missiles. Furthermore such a forum would be the right place to bring the activities and plans of the transatlantic alliance into line with the current threat. It would also be conceivable to involve high-ranking political representatives of non-NATO states in the work of the alliance, whether permanently or case-by-case. Russia and other European countries should view this as an invitation to cooperation and trust.

The Special Role of France

France and Great Britain are the only European nations with their own nuclear deterrents. At first the French government was highly sceptical about the American missile defence programme. This position has since changed. France now accepts conventional deterrence and is prepared to act pre-emptively. For some time the country has not only been participating increasingly in international military deployments, but has also intensified its missile defence activities. There are also strong arms policy interests behind this change of course. France would like to prevent Europe's military technology from falling too far behind that of America so that the market is left to US firms alone. France is carrying out ballistic missile defence projects with Italy and Great Britain. At the same time Paris is supporting the EADS arms company in seeking cooperation with the American Lockheed Martin and Northrop Grumman firms. In July 2004 these companies concluded a cooperation agreement.[61]

At first glance the fact that France's armed forces are not in the NATO command structure appears an obstacle to a joint European missile defence programme. Nevertheless the French involvement in the feasibility study and in the ALTBMD programme, and the latest statements by President Nicolas Sarkozy, indicate that Paris—partly out of economic interest—is carefully drawing closer to the transatlantic alliance.[62] The French government's agreement to the missile defence programme is likely to depend chiefly on whether French industry is involved in that programme. Simply to rely on American technology would be unacceptable to the French. Paris would only accept European participation in the American

61 Ronja Kempin and Jocelyn Madsley, "Missile Defence à la Française," *Contemporary Security Policy*, Vol. 26, No. 3, December 2005, pp. 505–519.

62 Elaine Scolino and Alison Smale, "Sarkozy Clarifies France's Iran Policy," *International Herald Tribune*, September 24, 2007.

THAAD system if the European NATO nations decided on at least their own station with mid-course phase interception missiles or European early warning satellites.

As an alternative to the US GBI, in an analysis the EADS company has presented the Exoguard system. It is said to be able to attack ballistic missiles in the mid-course phase far outside the earth's atmosphere. According to EADS it would be more capable than the American system. But it is yet to be developed. Because of the medium-turn dependence on data from the American Aegis systems and satellites and on the GBI station planned for Poland, the French government admittedly has hardly any other option than to agree to the incorporation of US systems in the NATO shield being established. In parallel, by constructing additional national facilities France could maintain a certain independence from the transatlantic alliance and thus keep a basic pillar of French security policy standing.

In all likelihood France will first insist on handling missile defence as an EU rather than a NATO matter. But as a European system outside NATO could not be financed, and for the moment there is no alternative to using American elements, France may first use the argument that Europe must remain independent from the USA to uphold its own interests, but ultimately accept a solution in the framework of the transatlantic alliance.

Missile Defence as a Factor for Cohesion

At the Bucharest summit in early 2008 the heads of state and government of the member nations will decide what direction NATO will take as regards ballistic missile defence—unless they once again postpone the question. This decision will be decisive for the strategic position of the alliance. NATO is currently in a difficult phase. The damage caused to transatlantic relations by the USA going it alone in the war against Iraq is only slowly being repaired. As the members of NATO are not prepared to make troops available, the NATO Response Force (NRF) is not making any headway, and the project may have to be drastically reduced. The outcome of the mission in Afghanistan is not clear. If the intervention fails this could have unforeseeable consequences for the European and global security architectures. In this situation a joint project—the protection of the territory from harm—is of incalculable value. Quite independent of the nature of future NATO actions outside the alliance area, common defence and solidarity with partners in case of military conflict or terror attacks remain as ever the fundamental basis on which an active—and not marginalized—NATO stands. For new members the prospect of reliable protection of their sovereignty, their national security and territorial integrity would be the greatest incentive for joining the transatlantic alliance. This would also mean joining the NATO air defence system. Cooperation in multinational command posts and headquarters, and NATO's uniform procedures and common task, make the transatlantic alliance extremely attractive to members and interested parties. A missile defence shield would make a strong contribution to cohesion within the alliance and be an important means of bringing transatlantic commonality back into the focus.[63]

In the USA itself an increasing number of voices are asking their own administration to show more sensitivity to European interests and Russian preoccupations. The bilateral negotiations with Poland and the Czech Republic aroused considerable disquiet in NATO. Admittedly Washington informed Russia of its plans behind closed doors; from the diplomatic viewpoint, however, the US action was highly insensitive. Apparently the US government had not allowed for the massive opposition of the European partners and of aspiring Russia. Washington is now using more conciliatory tones and making interesting offers to NATO and the Kremlin. Without doubt it lies in the American interest to build a credible architecture for missile defence in Europe. However this is only possible on a large scale if the Europeans are involved and play an active part in the project. The US offer to make the data from its seaborne and satellite sensors permanently available to its European partners should be considered a first concessionary step. Beyond this it could be of great interest for both sides to exchange technologies. For the Europeans also have know-how to offer which would be interesting for American industry.

By acting transparently and offering involvement the USA should take away the Russian government's feeling of being isolated. Moscow must nevertheless be aware that a joint NATO-Russia defence system is not a realistic future scenario. Linguistic and mental barriers and differing procedures would impede that kind

63 Ronald D. Asmus, "How Missile Defense Could Heal Transatlantic Relations," *The New Republic*, April 2, 2007, www.gmfus.org/publications/article.cfm?id=293.

of cooperation which is a military commonplace in the transatlantic alliance. Furthermore it is questionable whether the Russian side would be prepared to allow deep insight into its military structures, procedures and equipment. But this would be essential for intensive cooperation. Russia's announcement that it will protect all important Russian industrial centres with the new S-400 missile defence-capable system by 2015 indicates that Russian risk analyses are similar to those of NATO.[64] Of course Moscow also takes into account a nuclear threat from Chinese middle-range missiles. In the 1987 Intermediate-Range Nuclear Forces (INF) Treaty, Russia itself together with the United States undertook to do without such missiles with a range from 500 to 5500 kilometres. Now President Putin is demanding that this treaty be extended worldwide in view of the potential threats from the Middle East and China. Russia's military consider that this agreement is shackling their own armed forces and damaging the military capabilities of the country. The USA and NATO could offer to include Russia in their data net. From NATO's viewpoint it would be desirable for Moscow to take serious interest in cooperation and not to go on trying to delay American plans with unrealistic proposals.

64 Marina Zapf, "Russen schützen Moskau vor Raketen" (Russians protect Moscow from missiles), *Financial Times Deutschland*, August 7, 2007, p. 12.

Summary

In the medium-term threats to Europe from states which possess weapons of mass destruction and long-range missiles cannot be excluded. To meet this danger missile defence capabilities are required. In this context it is not important that Berlin, Hamburg or Munich are not at the moment within range of states with a risk potential. Today it is rather a matter of considering the security requirements and interests of our European partners in NATO and the EU as well as of the United States. How rapidly Iran or Pakistan will extend the ranges of their carrier missiles can hardly be predicted. If one of these countries could nevertheless hit Germany with nuclear weapons in 10 or 15 years, this would radically change the strategic situation of Central Europe. Nor can additional threats from further users of ballistic missiles be excluded.

In the final analysis, where missile defence is concerned it is not merely a question of whether Iran, Pakistan or another state, which now or in the future possesses weapons of mass destruction and the necessary missiles, could actually threaten Germany and its partners in the transatlantic alliance. It is probable that these states also consider ballistic missiles and weapons of mass destruction primarily as a means of deterrence. Iran for example is building up its missile arsenal chiefly in order to reduce the freedom of action of its enemies—in the first place the USA. For the United States it is thus of first importance not to be vulnerable to deterrence itself, in order to retain military freedom of action in the Persian Gulf or in the wider Middle East. Washington wishes to make it clear to the proliferators in the regions concerned that a potential threat to Europe can also not limit this freedom of action.

In Germany more objective debate is urgently required with regard to Russia. In the public discussion the plans to construct a defensive US system have clearly been more severely criticized than the latest Russian testing of offensive intercontinental missiles or Moscow's efforts for hegemony in the post-Soviet area. It will suit Russia if its reactions cause unrest and disharmony within NATO. The threat to aim missiles at the planned US facilities in Poland and the Czech Republic or to station ground-to-ground missiles in Kaliningrad—an island within NATO territory—is however fully unacceptable to the alliance.

To reduce tension, new acceptable and realistic areas of cooperation with Moscow should be identified. But in so doing the defensive capability of the transatlantic alliance should not be damaged, nor should NATO force Russia into the position of a victim of provocation by offering insufficient consultation and cooperation. NATO should rather highlight areas of shared interest and build up a basis of trustful cooperation. In the field of arms control in particular Russia is an essential partner for the future European and global security architecture.

Decisions of such importance as that on a NATO missile defence shield can often only be shown to have been correct or wrong with historical hindsight. It is also conceivable that reality overtakes them. What is clear is that systems for defence against ballistic missiles are no longer models which can only be put into practice in the distant future. Already today the members of NATO dispose of the necessary technologies and finance to construct a credible and effective shield. Of course this will take some years. European members should bear it in mind that this may be the last attempt by the USA to involve all NATO partners in an American programme. It must however be the common goal of the alliance to prevent individual nations from breaking out of the community because they feel that their security requirements are no longer being properly met. In contrast the alliance must be mindful that its members should remain integrated in the cooperative security policy structures. If there is no agreement within NATO, a common European defensive shield will not be realized in the foreseeable future. Instead of that, individual states could develop their own national programmes, which would lead to zones of varying security in Europe. This in turn would make united action by the Europeans, for example in relations with the Iranian government, practically impossible.

The impending missile defence decision could affect the security of Germany, its partners and NATO overall for decades. But not only that. The bonding effect which the construction of a system architecture would have on the cohesion of the alliance in the 21st

century should not be underestimated. Since the transatlantic alliance was created, joint action against risks and threats have been the essential foundation for its success.

Abbreviations

ACCS	Air Command and Control System
ACO	Allied Command Operations
ALTBMD	Active Layered Theatre Ballistic Missile Defence
AWACS	Airborne Warning and Control System
CAOC	Combined Air Operations Centre
C2BMC	Command, Control, Battle Management, and Communications
DSP	Defense Support Program
EADS Astrium	European Aeronautic Defence and Space Company
EKV	Exoatmospheric Kill Vehicle
ESDP	European Security and Defence Policy
EU	European Union
GBI	Ground-Based Interceptor
INF	Intermediate-Range Nuclear Forces
MEADS	Medium Extended Air Defence System
NATO	North Atlantic Treaty Organization
NEMP	Nuclear Electromagnetic Pulse
NRF	NATO Response Force
PAC-3	Patriot Advanced Capability 3
SACEUR	Supreme Allied Commander Europe
SAMP/T	Sol-Air Moyenne Portée Terrestre
SBIRS	Space-based Infrared System
SM-3	Standard Missile 3
STSS	Space Tracking and Surveillance System
THAAD	Terminal High Altitude Area Defense
TMD	Theatre Missile Defense
UN	United Nations
USEUCOM	United States European Command