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EDITOR'S NOTE

While missile defences have a long and controversial history, the attention they have attracted over the last few years is not about to abate. Can missile defences actually work as advertised? Are such active defences an appropriate response to real or purported missile threats? What are their implications for the perennial “cornerstone” (or is it “sacred cow”) of deterrence? Although these and similar questions have been raised in previous instalments of the missile defence debate (from the genesis of the ABM Treaty to GPALS via SDI), they now present themselves in a very different and complex international security environment and need revisiting.

As we go to press, the outcome of the United States presidential election is still unknown. Since President Clinton pushed the decision on NMD deployment to his successor, the incoming president will be making a decision with long-term and serious ramifications for arms control and disarmament. UNIDIR’s natural point of interest, and the underlying common theme to the papers in this issue of *Disarmament Forum*, is the impact of missile defence plans, statements and deployments on prospects for arms control, non-proliferation and disarmament.

Our next issue of *Disarmament Forum* will focus on Middle Eastern security. The ongoing stalemate in the Middle East Peace Process has taken a drastic turn for the worse in the past months. With violence exploding on the West Bank and Gaza, hopes for positive steps towards a Palestinian-Israeli accord in the near future are all but extinguished.

What are the near to mid-term prospects for the region? What is happening with ACRS and what, if anything, are its chances? Topics such as the international community’s wavering equivocations on its Iraq policy, recent political changes, and the indisputable strategic importance of the region demand a new examination through a regional security and disarmament lens. The Middle East (broadly defined) remains one of the world’s most heavily armed regions. This issue of *Disarmament Forum* will offer a deeper exploration of how and why the Middle East constitutes such an important challenge to arms control and disarmament.

UNIDIR turns twenty! To kick off the year-long celebration, UNIDIR held a discussion meeting “Disarmament as Humanitarian Action” in conjunction with the Department for Disarmament Affairs. This event was held at UN Headquarters in New York during the First Committee Meetings. The event was a standing-room only success, with policy makers, diplomats, civil society organizations and inter-governmental bodies attending. This was the first event of a year-long series of UNIDIR anniversary events.

On 20 October, France supported a resolution (A/C.1/55/L.3/Rev.1) with seventy co-sponsors on the occasion of our anniversary. The resolution recognizes the importance and quality of the Institute’s work, encourages Member States to consider making financial contributions to UNIDIR

and recommends that the Secretary-General seeks ways to increase the funding of the Institute. We welcome this resolution and would like to extend our gratitude to all those who supported it.

UNIDIR's Visiting Fellows from South Asia arrived in Geneva the first week of November. They are Shiva Hari Dahal (Nepal, specialist in human rights), Haris Gazdar (Pakistan, political economy), Soosaipillai Keethaponcalan (Sri Lanka, ethnic relations and conflict resolution) and G. Padmaja (India, military and state security). The four fellows will be working together until April on a co-operative research project focusing on regional security and jointly producing a monograph. We are certain that this new wealth of regional knowledge at the Institute will enrich all of our activities.

On 30 November 2000, UNIDIR hosted a private discussion meeting entitled "Breaking the CD Deadlock". For over four years the CD has not been able to agree on a programme of work. Some critics go so far to claim that the deadlock at the CD is discrediting multilateral arms control and disarmament endeavours. Policy makers are beginning to wonder if the CD is worth investing in, as evident in the fact that some countries have reduced their delegation numbers and level of representation to the CD. In response to this worrying situation, the Institute held the first in a series of meetings designed to explore the underlying problems of the CD. The meeting, attended by over 100 experts, participants and observers of the CD generated a dynamic and thought-provoking debate with several suggestions of how to move the CD forward.

We are proud to present three new UNIDIR publications: *Tactical Nuclear Weapons: Options for Control*; *Tactical Nuclear Weapons: A Perspective from Ukraine*; and *Bound to Cooperate: Conflict, Peace and People in Sierra Leone*. See the publications section for further details.

Kerstin Vignard

Current plans for missile defence

John PIKE and Peter VOTH

The development of anti-missile systems began simultaneously with the advent of long-range missiles. Although thousands of nuclear-tipped missiles were deployed during the Cold War, neither the United States nor the Soviet Union invested substantially in anti-missile defences. The end of the Cold War has changed many things, not least of which is American interest in anti-missile technology. While the rest of the world remains largely disinterested in missile defence, the question is increasingly not whether the United States will deploy missile defence, but rather what types of defence when.

The United States

NATIONAL MISSILE DEFENSE

The American National Missile Defense (NMD) programme is intended to defend the entire territory of the United States against a small number of ballistic missiles — whether from an attack by one of the “states of concern” or from an accidental or unauthorized launch by an established nuclear power. Although plans for sea-based NMD are floated from time to time, the main thrust of American NMD efforts are directed toward the development of a land-based system. Current American deployment plans call for a system able to defend against five warheads to be fielded by 2005 (although President Clinton’s announcement that he would leave the decision to his successor will most likely push this timetable back further) to as many as fifteen warheads by 2015.

The American NMD system is conceived as a land-based, non-nuclear missile defence system employing silo-based, hit-to-kill interceptors and incorporating both orbiting and terrestrial early warning and battle management systems. In the event of a missile attack against the United States, the first notification of a missile launch would come from the network of early warning satellites. In the initial stages of NMD deployment, this capability would be provided by the Defense Support Program satellites, which have been in place since 1970. This system, however, is scheduled to be

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phased out over an eleven-year period beginning in 2001 by the Space Based Infrared System (SBIRS), which is being developed independently of NMD.

The SBIRS programme will be made up of satellites in high altitude (SBIRS High) and low altitude (SBIRS Low) orbits. SBIRS High will consist of four satellites in geosynchronous Earth orbit and two satellites in a highly elliptical orbit. The number of SBIRS Low platforms has not yet been determined, but they will employ two sensors — one acquisition and one tracking sensor — operating in a variety of wavebands including short-wave infrared, medium-wave infrared, long-wave infrared and visible. SBIRS High would be responsible for launch detection and over-the-horizon tracking, providing the earliest trajectory estimate to command and control systems.

SBIRS Low would provide mid-course tracking and discrimination capability in conjunction with the ground-based early warning radars currently operated by the United States. These radars, located at Flyingdales Moor in England, Thule Air Station in Greenland, Beale Air Force Base in California, Cape Cod Air Force Station in Massachusetts, and, after its completion in early 2001, Clear Air Force Station in Alaska, would receive both hardware and software upgrades as part of their new mission. The hardware modifications would involve the replacement of computers, graphic displays, communication equipment and the radar receiver, while the software would be rewritten to allow the acquisition, tracking and classification of small objects near the horizon. There would be no change in power, radar antenna patterns or operating frequencies as part of the NMD programme.

Once the re-entry vehicles have separated from the missile, the X-Band Radar (XBR) would act as the primary fire control radar guiding the interceptor to the target. Receiving cues from SBIRS Low and the early warning radars, it would employ a narrow radar beam that can detect a typical warhead at a range of 4,000 km, and is likely able to detect a reduced-signature target 2,000 km away. At smaller distances, it is said to be capable of discriminating between warheads, decoys and other debris. The first XBR site is slated to be built at Shemya, Alaska and current plans are to build a total of nine sites in a variety of locations around the world by 2015.

At this point the Ground-Based Interceptor (GBI) would be launched. The GBI is a fixed, land-based missile intended to approach an incoming warhead outside the Earth's atmosphere and release

The GBI is a fixed, land-based missile intended to approach an incoming warhead outside the Earth's atmosphere and release its payload, the Exoatmospheric Kill Vehicle.

its payload, the Exoatmospheric Kill Vehicle (EKV), which will steer itself to and impact with its target. Although the EKV would be able to discriminate between warheads, decoys and debris, it would receive mid-flight updates on the target from the ground-based radar and satellite sensors to increase the likelihood of a successful intercept. Initial plans are to base twenty interceptors

in Alaska (although not at the same site as the XBR), but the system will ultimately consist of 250 interceptors both at the Alaska site and at Grand Forks Air Force Base in North Dakota.

The GBI has proved to be the most technologically troublesome aspect of the system through the testing process, scoring only one hit out of three attempts. The first failure occurred on 18 January 2000 when a cooling line on the EKV malfunctioned, causing its infrared homing sensors to malfunction. The second, coming on 7 July 2000, was due to a problem in the booster itself. Including the successful intercept, the EKV has demonstrated its ability to track objects in space on three separate occasions. The battle management communications systems and XBR have also functioned well. Ironically, proof of the XBR's functionality came in part when it indicated that the decoy balloon failed to inflate during the 7 July test.

THEATER MISSILE DEFENSE

Attacks against the American homeland are not the only concern driving missile defence efforts. The proliferation of medium- and short-range ballistic missiles has increased the vulnerability of military facilities and other American interests and has prompted Washington to spend much time and effort (not to mention money) researching Theater Missile Defense (TMD) to counter these regional threats.

The only TMD systems currently fielded by American forces, the Hawk and the Patriot, are basically upgraded versions of existing land-mobile, surface-to-air missile systems. New design concepts rely on a two-tiered architecture consisting of upper-tier systems that attempt to intercept an incoming missile either above or just within the Earth's atmosphere and lower-tier systems that engage the missile at much closer ranges.

The Army's upper-tier system will be the Theater High Altitude Area Defense (THAAD) system. It is intended to provide extended coverage, engaging incoming missiles at a range of up to 200 km horizontally and 150 km vertically. This hit-to-kill interceptor would initially engage its target above the Earth's atmosphere, providing the opportunity for a second shot in the event of a miss, either by the THAAD battery or by the lower-tier system. The second chance could turn out to be important — the THAAD testing programme has been plagued by technical failures from a variety of different sources, and has scored only two successful intercepts out of eight attempts.

The lower-tier system working in conjunction with THAAD would be the Patriot Advanced Capability-3 (PAC-3), the end result of several major revisions to correct problems with the PAC-2 identified during the Gulf War. Since that time, work has been continuing on the PAC-3, which, far from being a mere augmentation of the original Patriot, is an entirely new missile. Whereas the PAC-2 uses a proximity fuse to detonate its warhead near enough to the target to destroy it, the PAC-3 uses a hit-to-kill strategy. As a result, the PAC-3 is able to use a smaller warhead and a smaller booster (the ERINT booster, developed in the 1980s for the Strategic Defense Initiative or SDI programme), reducing the size of the weapon and increasing the number of missiles able to fit on a launcher. Tests of the PAC-3 have generally met with success.

The Navy's upper- and lower-tier systems, respectively, the Navy Theater-Wide (NTW) and Navy Area Defense (NAD) systems, will, in essence, simply be upgrades to the air defences on Ticonderoga-class cruisers and Arleigh Burke-class destroyers that enable the AEGIS radar system and Standard Missile-2 Block IVA interceptors to track and destroy incoming ballistic missiles. NAD scored its second hit in as many tries in a test on 25 August 2000, and initial operational capability for NAD is planned for 2001 with flight testing for NTW to begin the same year.

OTHER SYSTEMS

The United States has been working on a number of other anti-missile systems as well. Most recently, the Tactical High Energy Laser, developed in co-operation with Israel, successfully shot down its target in a test on 6 June 2000. This system uses a deuterium fluoride chemical laser to shoot down medium- to short-range missiles at a range of up to 5 km.

Also employing directed energy technology is the United States Airborne Laser, a high-energy, chemical oxygen iodine laser mounted on a modified 747-400F aircraft which will shoot down theater ballistic missiles in their boost phase while in friendly airspace, hundreds of miles from the

launch site. A test aircraft is currently under construction, and a test against a Scud-type missile is set for 2003. If all goes as planned, a fleet of seven Airborne Lasers will be operational by 2008.

There are several advantages to intercepting missiles during their boost phase. At that time, a missile is a relatively large and vulnerable target; it does not manoeuvre and its exhaust is very obvious to infrared sensors. In addition, the destruction of the missile, with the attendant dispersion of debris and hazardous substances, occurs over enemy territory. As a result, the United States is working on other schemes to shoot down missiles in the boost phase with missiles either launched from ships, manned aircraft or unmanned aerial vehicles. However, these ideas all suffer from the same flaw — the weapon must be within range of the launch site at the time of the launch to be effective. As a result, either a fleet of these weapons would need to be on station continually, all over the world, or advance warning of several hours or days would be needed before an attack — an unreliable assumption on which to base the nation's defence.

Russia

Russia remains the only country with a currently operational strategic anti-missile system. In service with various upgrades over the past three decades, the Moscow anti-missile system is permitted

The Moscow anti-missile system is permitted by the ABM Treaty. It is capable of covering only a limited region centred on Moscow — unlike the American NMD system, which is intended to protect the entire national territory of the United States.

by the ABM Treaty. It is capable of covering only a limited region centred on Moscow — unlike the American NMD system, which is intended to protect the entire national territory of the United States. The most recent upgrade to the system, designated the A-135, became fully operational in 1989, but was designed in the late 1970s. It operates as a two-tiered system, using the nuclear-tipped SH-08 Gazelle and the SH-11 Gorgon as its short- and long-range interceptors.

Russia has also developed a number of surface-to-air missiles capable of missions against medium- to short-range missiles. The mainstay of the Russian ABM arsenal is the S-300 series (SA-10, SA-12 and SA-12b), land-mobile interceptors with a proximity fuse conventional explosive warheads and ranges between 75–200 km.

Russia is very keen to export the SA-12, marketing it as a system comparable to the Patriot. A number of countries have expressed interest in purchasing the system, including India, South Korea, Egypt and the United Arab Emirates. China has imported 100–200 SA-10 systems, which are deployed around Beijing, and has expressed interest in producing the SA-10 under license as well. In addition, it has been reported that China's HQ-18 missile is a copy of the Russian SA-12, although this cannot be confirmed. Nevertheless, it is presumed to have an anti-missile capability.

The S-400 Triumf (SA-20) is the latest addition to Russia's arsenal. While details of the system are not readily available, the anti-missile variant of the Triumf appears to have a range of 120 km, and can engage targets at altitudes as high as 35 km. At last report, the first launcher was due in the field in late 2000, although it will be loaded with older S-300 missiles.

The more capable S-500 system is reported to be able to engage target missiles with ranges of up to 3,500 km. However, it appears that Russia has not undertaken actual development of the S-500 due to a lack of funding, and has consequently proposed joint development of the system with the United States.

East Asia

The United States considers the participation of Japan, South Korea and Taiwan as vital to the ultimate success of TMD. All three nations have expressed concerns about North Korean and/or Chinese missile programmes, and all have expressed various degrees of interest in American TMD. South Korea has also considered purchasing the Russian S-300 to counter the North Korean threat.

Taiwan regards the Chinese missile threat as serious and, as a result, is interested in participating in missile defence. Taiwan currently fields up to 200 PAC-2 missiles to counter Chinese offensive missiles and has plans to purchase the PAC-3. In addition, the indigenously developed Sky Bow II has demonstrated an anti-missile capability. Taiwan has sought to purchase AEGIS-class destroyers from the United States, which would almost certainly be equipped with theater missile defence interceptors, although to date the American government has declined to authorize such sales. In early 2000 the Clinton Administration did authorize the installation of a large phased array early warning radar in Taiwan (probably the PAVE PAWS radar formerly installed at Warner Robins Air Force Base in Georgia), though details remain to be negotiated. The American Congress has also introduced legislation proposing strengthened United States-Taiwan TMD co-operation, which has been welcomed by the government of Taiwan. These moves have raised considerable concern on the mainland, particularly the increased co-operation between Taiwan and the United States.

Interest in TMD has been tempered by concerns over technical feasibility. Skeptics have noted the poor performance of the PAC-2 against the relatively uncomplicated Scud during the Gulf War, the amount of damage caused by the Patriots when they were launched against the Scuds during the same conflict, and the numerous failures in the THAAD flight-testing programme. In particular, Japan has expressed concern about not only the financial but also the political costs of the system. In addition, Japan still harbours bad memories of the last time the two nations entered a joint military development agreement — the FSX fighter project (Congress, dismayed over what it thought was an unfavourable flow of technology to Japan, forced the renegotiation of the agreement a few months after it came into force). Nevertheless, North Korea's August 1998 missile test spurred Japan to action, and in early 1999 it signed an agreement with the United States to formally begin a joint theater missile defence development programme based on the NTW scheme.

Israel

In order to meet its requirement for an interceptor to defend military targets and population centres against medium- and short-range ballistic missile attacks, Israel undertook in 1986 the development of a missile defence system in conjunction with the United States. In addition to assuring the security of a regional ally, the United States wanted to develop a new, advanced anti-tactical ballistic missile that could be incorporated into its own TMD systems.

The result was the Arrow 2, a TMD system that can detect and track up to fourteen incoming missiles as far away as 500 km and can intercept missiles 50–90 km away (although the range may be as little as 16–48km). The interceptor uses a terminally-guided, proximity fuse, high-explosive warhead to destroy targets at an altitude of 10–40 km. Initial Israeli plans were to deploy two Arrow 2 batteries, but in 1998 this was increased to three batteries. The first battery was declared operational in the second half of 2000.

The United States has financed two-thirds of the estimated \$1.6 billion cost of developing the Arrow programme, and put another \$45 million toward construction of the third battery. In order to provide this assistance, the United States made an exception to its general policy of denying technology transfers to missile programmes defined as Category I by the Missile Technology Control Regime guidelines.

India

India has been pursuing a system to counter Pakistan's missile threat for a number of years. It would prefer to develop an indigenous capability to produce such a system, whether by modifying one of its existing surface-to-air systems, producing one under license, or simply purchasing a system off-the-shelf. India has expressed particular interest in the Israeli Arrow 2 or the Russian S-300. Recently, unconfirmed reports have suggested that India may have entered into a covert arrangement with Israel to obtain technology related to the Arrow 2.

Arms control and international relations

American deployment of NMD would evidently require revision or abandonment of the ABM Treaty. Most fundamentally, a NMD would be inconsistent with the explicit prohibition against nation-

The original construction of the treaty was in essence a predictability measure — to ensure that the deployment of large nation-wide systems would require more time than would be required to deploy offsetting offensive forces, and thus to reduce incentives for deployment of such forces.

wide missile defence systems in Article I. As the remaining provisions of the treaty are simply an elaboration of the interlocking measures associated with the implementation of this premise, a revised treaty regime would unavoidably alter the security environment codified by the treaty. The original construction of the treaty was in essence a predictability measure — to ensure that the deployment of large nation-wide systems would require more time than would be required to deploy offsetting offensive forces, and thus to reduce incentives for

deployment of such forces. Many of the revisions to the treaty required to accommodate even a modest NMD deployment would lay the base for much larger anti-missile deployments, thereby increasing incentives for offensive force build-ups as a hedge against uncertainty.

The various space-based satellite sensor systems would contravene Article V's ban on space-based system components. The use of the early warning radars would contravene both Article VI's prohibition of the modification of non-ABM radars to work as part of an ABM system and Article IX's ban on the deployment of system components in other nations. The resulting global sensor network would appear to be capable of supporting far more than the few hundred interceptors contemplated as the initial tranche of NMD.

In addition, the placement of the XBR at Shemya would be inconsistent with Article III, which specifies that all radars must be co-located with the interceptors. Furthermore, the deployment of interceptors in Alaska would require modification of existing treaty provisions that interceptors can be located no more than 150 km from the national capitol or a specific ICBM site selected for defence. And plans for as many as 250 interceptors at two sites would require revision of the 1974 amendments that reduced permitted deployments to 100 interceptors at one site (in isolation perhaps a modest change from the initial limit of 200 interceptors at two sites).

Russia, America's partner in the ABM Treaty, has maintained its objections to such substantial alterations to the treaty. According to a Russian Foreign Ministry news briefing on 20 October 1999: "Russia is not engaged in any bargaining over this treaty. We are not conducting any negotiations on any amendments to the ABM Treaty, especially amendments that would alter its key provision banning any deployment of national ABM defenses or creating any basis for such defenses." More recently, Russian President Vladimir Putin told the Russian Parliament on 14 April 2000 that Russia would withdraw from all arms control agreements if the United States forced changes to the ABM Treaty, saying that "I want to stress that, in this case, we will have the chance and we will withdraw not only from the START II Treaty, but from the whole system of treaties on the limitation and control of strategic and conventional weapons."

Russia is joined in its objections by China, which sees American deployment of NMD as directed against its nuclear force as well. China's small ICBM force (perhaps twenty missiles currently capable of reaching the United States) is precisely the size force that the American NMD system is designed to counter in the mid-term, by 2010. Recalling American nuclear threats during the era before China got the bomb, Chinese security planners would be remiss in not drawing the necessary conclusions. In the early 1980s China embarked on a programme to replace its existing large liquid-propellant missiles with smaller solid propellant missiles. This rather leisurely programme is finally bearing fruit. On 2 August 1999, it tested the DF-31, a two-stage solid-fuel missile capable of reaching the west coast of the United States, which will form the basis for a longer range three-stage version called the DF-41. Both of these missiles, along with a sea-based variant of the DF-31 designated the JL-2, will probably enter service by 2010. Eventual Chinese force level goals are uncertain, but would almost certainly be predicated on a requirement to offset foreseeable American NMD plans. Reportedly, the United States intelligence community has concluded that China may eventually deploy as many as 200 warheads on these missiles, a ten-fold increase over current capabilities.

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On 18 July 2000, Russia and China issued a joint statement that called the ABM Treaty "the cornerstone of global strategic stability and international security". The United States drive for NMD has, according to the statement "aroused grave concern" on the part of China and Russia, who hold that the programme is aimed at "seeking unilateral military and security superiority" and state that "to amend the text of the ABM Treaty is tantamount to an act of undermining the ABM Treaty".

These protests have had practical consequences, stalling negotiations on the Fissile Material Cut-off Treaty (FMCT). Although China is not a party to the ABM Treaty and associated strategic arms agreements, it has long been a beneficiary of the fact of the existence of the ABM Treaty. It is not difficult to understand a Chinese calculation that it would be unwise to agree to FMCT caps of its weapons stockpile, when a rather substantial augmentation of that stockpile might be needed to compensate for an American NMD deployment.

Because of geographical proximity, theater missile defence systems are in many respects "strategic" for regional powers like China, India and even Israel. Consequently they have the same potential as NMD in the context of the United States and the Soviet Union — a potentially destabilizing force in a regional arms race. Between India and Pakistan, for example, the same logic may hold true as did for the authors of the ABM Treaty almost three decades ago. A drive by India or Pakistan to negate the other's offensive missile force by deploying an anti-missile defence could provoke offsetting missile build-ups.

Developments in the anti-missile arena may impact regional stability indirectly as well. Neither Pakistan nor India has appeared overly interested in acquiring anti-missile systems. But India's nuclear

aspirations are in part a response to China's nuclear status, just as Pakistan's nuclear programme reflects that of India. Should China choose to embark in a substantial nuclear build-up to offset prospective American NMD deployment, India would surely take China's force levels into account in its own planning, as would Pakistan in turn. And in the worst case, the nuclear domino effect might extend beyond China, India and Pakistan, encouraging other countries to join the nuclear club.

One saving grace is the rather sedate pace at which American missile defence programmes are likely to proceed. Ronald Reagan's SDI was initially cast as a five-year programme, yet after nearly two decades an operational capability remains at least five years in the future. The impact of NMD and TMD deployment is a function not simply of the direction in which the security environment is moving, but also the pace at which it is changing. While many actors may be concerned by the prospect of radical change, they may at least take comfort in the possibility that the future may be long delayed.

National Missile Defences and arms control after Clinton's NMD decision

Daryl G. KIMBALL and Stephen W. YOUNG

On 1 September 2000, United States President Bill Clinton announced that he would not proceed with deployment of the proposed national missile defence (NMD) system. Citing the fact that the technology is still unproven and acknowledging that more time is necessary to address concerns among American allies and opposition from Russia and China, he indicated that he would leave any deployment decision to his successor.

Despite President Clinton's wise choice, the attention devoted to American NMD proposals over the last several years is not about to abate. The fast-paced development and testing schedule for the American ground-based NMD system continues with the aim of achieving an initial operational capability by 2006–07. The next integrated flight test of the system is scheduled for January or February 2001. In order to keep pace with this schedule, the next American president will be under pressure to decide, as early as November 2001, whether to begin construction of a key NMD radar site in Alaska.

Among American policy elites, there continues to be widespread concern, which is often overstated,¹ about missile proliferation involving Russia, China, Iraq, Iran, North Korea, India and Pakistan. In addition, some American political leaders now argue that "states of concern" possessing weapons of mass destruction (WMD) and missiles to carry them cannot be deterred from using these weapons.

The disparity between the economic and military capabilities of the United States and Russia will continue to fuel unilateralist sentiment in the Congress and disdain for arms control treaties — particularly the 1972 Anti-Ballistic Missile (ABM) Treaty — which were designed to manage a superpower nuclear arms race. That race appears for now to have ended. But a stable, post-Cold War American-Russian relationship has not yet developed and the framework of international treaties designed to reduce the threat of vertical and horizontal proliferation is under severe stress.

Though far from the end of the NMD debate, President Clinton's 1 September decision does provide the United States and the rest of the international community with some time and an important opportunity to re-examine the case for — and against — NMD. Factors to consider include NMD's technical feasibility and reliability, its cost effectiveness, and its relationship to

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deterrence. Significantly, Clinton's decision provides time to reassess how existing tools, including arms control, diplomacy, and trade and aid programmes, can be better suited to handle existing and emerging threats in the post-Cold War era. In addition, the decision provides some time for possible new initiatives that have the potential of preventing the emergence of new missile threats.

What will Washington do next?

There is no political consensus in Washington on how and whether to pursue NMD deployment or on how to pursue reductions in global strategic nuclear weapons arsenals, and it is not likely that a clear course of action will emerge for some time. Since the Senate voted in March 1999 97–3 in favour of a measure calling for an American policy of NMD deployment “as soon as technologically feasible” and further negotiated strategic nuclear arms reductions, some in Congress have expressed doubts about NMD testing and the effect of NMD deployment on nuclear arms control priorities. The Senate's rejection of the CTBT and the deep scepticism about NMD among American allies has led most Democrats and many Republicans to counsel a more deliberate approach to NMD. With President Clinton's 1 September decision, American NMD deployment — once considered a “sure thing” — is once again in serious question.

The outcome of the November 2000 presidential and congressional elections will be a pivotal factor in the ongoing NMD debate. Although both of the two major American presidential candidates and their respective political parties have voiced their support for research and development of some form of NMD, their approaches to the issue differ markedly. The presidential candidates' respective views mirror the prevailing schools of thought among American policy elites on national missile defences. Both approaches, however, pose enormous risks to international security.

The Democratic nominee, Vice President Al Gore, supports the Clinton Administration's plan to conduct research and testing of a limited NMD with ground-based interceptors at up to two sites using a network of new and upgraded radars and satellites. Like Clinton, Gore has said he would support deployment if it can be done within the framework of a modified ABM Treaty with Russia. Reflecting the view of fellow congressional Democrats and some moderate Republicans, Al Gore opposes more robust missile defence systems “... that would unnecessarily upset strategic stability and threaten to open the gates for a renewed arms race ...”.² Gore, like the Clinton Administration, argues that the best way to preserve the ABM Treaty and the “strategic stability” it has helped maintain is by forging a sweeping agreement on START III and modifications to the Anti-Ballistic Missile Treaty to allow for a limited American NMD to address the potential threat of a few tens of long-range missiles.

Even if Russia were to shift its position and agree to such an approach, it remains doubtful that Gore, if elected, could assemble the two-thirds Senate majority necessary to approve such a deal. While there is political support for verifiable strategic arms reductions to START III levels, twenty-five Republican Senators are already on record opposing an agreement with Russia to modify the ABM Treaty that allows only a limited NMD system.³ A Gore Administration would be hard-pressed to win agreement from Russia and build a consensus on NMD and strategic nuclear weapons reductions in the Senate in 2001.

The Republican nominee, George W. Bush, like many congressional Republicans, says the Clinton-Gore approach is “flawed” because “the system is initially based on a single site” and because

it rules out sea- and space-based NMD options. Bush has pledged that he will deploy a much larger and broader missile defence “to protect all 50 states and our friends and allies and deployed forces overseas ... at the earliest possible date.”⁴ Like many of his fellow Republicans in Congress, Bush and his advisors consider the ABM Treaty’s effect on curbing offensive strategic build-ups as irrelevant and obsolete due to Russia’s economic decline and reduced capacity to maintain its existing nuclear forces, let alone mount an offensive nuclear arms build-up.

Bush says that he would, if elected, propose modifications to the ABM Treaty to allow for American NMD, but if Russia does not agree to the American proposals, he would withdraw from the Treaty. To help to demonstrate to Russia that “America’s development of missile defences is a search for security, not a search for advantage,” Bush proposes unilateral strategic nuclear weapons reductions and nuclear warhead de-alerting at least to START II levels.⁵ Mr. Bush’s proposal for defences with offensive strategic force reductions outside the framework of existing treaties would have the support of some in Congress, mainly those who are disdainful of arms control and advocate that the United States should abandon the concept of nuclear deterrence based on the strategy of Mutual Assured Destruction and the ABM Treaty, in favour of a unilateralist national security strategy based on robust missile defences.

However, Mr. Bush has not presented a specific blueprint or cost estimate for his more ambitious and more expensive proposal for land-, air- and sea-based missile defence for the United States and its allies. If Bush is elected, his Administration will likely require a good part of his first year in office to work out the details of his NMD proposal. Once he does, it will be subjected to tough questions from NMD sceptics, as well as supporters who favour one or another of the “alternative” NMD technologies and architectures. The process of developing and organizing support for a “new” NMD proposal could be as time consuming and difficult as it was for the Reagan Administration to develop a proposal for the MX “mobile” missile in the early 1980s. After sharply criticizing President Carter in the 1980 election campaign for its proposed basing mode, President Reagan’s advisors struggled for over two years to develop another plan. In the end, the MX was deployed in fixed silos.

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Questions that must be addressed

No matter who is elected or which NMD scheme might be proposed, the next American president will have to make a hard-nosed, realistic assessment of American national missile defence policy. Before the United States or its allies commit themselves to deployment of a system, proponents, opponents and sceptics of NMD must carefully re-examine the following questions.

CAN NMD WORK AS ADVERTISED?

The United States has shown that it is technically feasible to “hit a bullet with a bullet”, but it has not answered the question of whether this can be done reliably in a real-world setting. The ground-based missile defence programme under development and testing is still far from proven. The January and July 2000 flight test failures are but the most visible manifestations of the technical difficulties now facing the project.

The NMD system under development is not designed to discriminate against warheads accompanied by realistic countermeasures that would be available to any state developing long-range missiles.

The current NMD flight testing programme is not yet scheduled to test against likely countermeasures. As scientists from the Massachusetts Institute of Technology and the Union of Concerned Scientists noted earlier this year, the NMD system under development is not designed to discriminate against warheads accompanied by realistic countermeasures that would be available to any state developing long-range missiles.⁶ Independent Pentagon-appointed auditors have suggested that the system must improve its target-decoy discrimination capability.⁷ This year, Congress may impose the stringent NMD testing requirements that the Senate narrowly rejected 52–48 in July 2000.

Military and political leaders also need to determine how reliable the NMD system is likely to be in order to understand how big a risk they run that a warhead targeted at a city would get through the NMD. The margin for error is very slim. To meet its goals, the Pentagon requires that each kill vehicle must have approximately 90% chance of successful intercept, while as a whole the system is required to have nearly a 100% probability of success. It is very unlikely that this high level of confidence can be achieved even after completion of the Pentagon's nineteen planned intercept tests in 2005 (and perhaps later). All but the last three of these nineteen tests are development tests. Only the last three tests are operational tests, which will use production-quality components and the actual military users to assess how the system would work in the real world.

In addition, Pentagon auditors also warn that the booster rocket now under development of the production version of the NMD booster rocket (which will lift the "kill vehicle" into space) is now nine months behind schedule and may not be ready for its first scheduled test in 2001. Overall, the NMD test programme schedule remains "high risk", and, if the recent testing programme is any guide, new problems and additional delays should be expected.

The technical problems, test failures and schedule delays afflicting the current ground-based NMD programme have prompted some NMD proponents to suggest that there are other, more promising technologies and architectures that are less expensive and could be deployed sooner. Mr. Bush and others⁸ point to sea-based NMD technologies as an interim step toward a comprehensive land-, sea- and space-based NMD system. Some advocate upgrading theatre missile interceptors planned for United States Navy AEGIS destroyers and claim that deployment could begin by 2003 and fully deployed by 2009. Others, like physicist Richard Garwin,⁹ recommend larger ground- or sea-based "boost-phase" interceptors to be installed near North Korea and in Russia or at sea on converted cargo ships. Like the ground-based NMD system, a sea-based system would use space-based tracking sensors and, in some scenarios, would add space-based interceptors.

However, two new independent critiques of sea-based and boost-phase options conclude that they do not offer easy or quick solutions to the technical challenge of making national missile defences work in a real-world setting.¹⁰ Pentagon assessments of sea-based NMD systems suggest that initial deployment might begin by 2011 at the earliest and could not be completed until 2020. Furthermore, using AEGIS ships for NMD is highly problematic because the theatre missile defence interceptors on AEGIS ships are smaller than those that would be required for boost-phase NMD and it would be impractical to incorporate larger boost-phase interceptors on these platforms.

Like the existing American ground-based programme, sea-based NMD would require the United States and Russia to negotiate changes to the ABM Treaty. Furthermore, difficulties in joint developmental programmes and citing decisions for land-based boost-phase interceptors would make its cost and implementation both politically and technically uncertain. Even a global, sea-based "mid-course" NMD system would have to be considered limited in its capability and could be stymied by countermeasures. Sea-based NMD platforms would also become potential targets and

require additional military resources to protect. If only a limited sea-based NMD system were pursued, it could cost at least \$30–43 billion dollars and take decades to build. NMD does not yet work and there is no quick fix.

ARE SUCH ACTIVE DEFENSES AN APPROPRIATE RESPONSE TO REAL OR PURPORTED MISSILE THREATS?

Even if a NMD system can be designed to distinguish warheads from decoys, engineered to be reliable and operationally effective, and if it does not prompt a state to build additional offensive missiles to over-saturate missile defences, NMD cannot guard against other, less sophisticated means to deliver a weapon of mass destruction. Should a country decide it wants to attack the United States with a nuclear, chemical or biological weapon, it is likely to choose delivery methods that are more reliable, less expensive, more covertly deliverable, more accurate, and likely to be more effective than long-range ballistic missiles. Without the ability to conduct nuclear-weapon test explosions, initial indigenous nuclear weapon designs are likely to be too large and heavy for a modest-sized ballistic missile, making delivery by ship, truck or even aeroplane more viable. Development and deployment of national missile defences will only make it more likely that such means of delivery are pursued.

Robert Walpole, an analyst at the Central Intelligence Agency told the Senate in February 2000 that “.. we project that in the coming years, American territory is probably more likely to be attacked with WMD from non-missile delivery means (most likely from non-state entities) than by missiles, primarily because non-missile delivery means are less costly and more reliable and accurate. They can also be used without attribution. Their appeal over missiles makes long-range ballistic missile attack on the United States even less likely.”

These shortcomings raise serious questions about the cost-effectiveness of NMD relative to other ways of addressing potential new missile threats. The non-partisan Congressional Budget Office (CBO) puts the total cost of building and deploying the three phases of the United States’ proposed “limited” NMD system at \$59.4 billion from 1996 through 2015, approximately \$3 billion annually. While it is difficult to estimate the costs of a layered, land-, sea- and space-based NMD, in 1996, the Senate Budget Committee estimated it would cost over \$100 billion to build and operate a layered system. If the sword is going to be mightier than the shield, why buy an expensive shield?

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On the other hand, if the United States and other Western nations were to take up North Korea on its recent proposal to terminate its testing, development and production of long-range ballistic missiles in exchange for international assistance with satellite launches, the cost of addressing the potential threat of a North Korean ICBM capability would be much lower. If the sword can be eliminated through diplomacy and foreign civilian space launch assistance, why build an expensive shield?

HOW DOES NMD AFFECT STRATEGIC NUCLEAR DETERRENCE?

For decades, the first line of defence against the threat of nuclear missile attack has been a combination of coherent and active diplomacy, effective arms control regimes, crucial foreign assistance programmes and, finally, deterrence — via the threat of massive retaliation. Deterrence

through “Mutual Assured Destruction” became formalized in 1972 with SALT I and the ABM Treaty. Though the risk of direct military conflict between the United States and Russia is near zero, the war-fighting plans and the weapons that undergird American and Russian nuclear deterrence — and the inherent risks of global nuclear annihilation — have not significantly changed since the end of the Cold War. Today, the United States and Russia maintain approximately 4,000 strategic nuclear weapons on constant, hair-trigger alert. Thousands more remain in strategic reserve.

The renewed interest in NMD in the United States stems, in part, from the belief that deterrence, combined with current diplomacy and arms control efforts, may not be sufficient to deal with potential new WMD threats to the West from states, such as North Korea and Iraq, led by “unpredictable” leaders. According to Walter B. Slocombe, United States Under Secretary of Defense for Policy, NMD “would help the United States to retain — and be seen to retain — our freedom to respond to a regional crisis because they would negate the potential of regional aggressors with small, long-range missile forces to attack the American homeland as a penalty for standing by our commitments.”¹¹

In making this argument, NMD advocates have failed to make a compelling case for why deterrence is not effective against a state such as North Korea. North Korea is a dictatorship. It has a large army. Its missile development programme is a serious concern and its missile exports a leading cause of proliferation. Its leadership is isolated and difficult to work with, at best. It has engaged in terrorist acts, and it frequently commits minor military provocations against South Korea. This does not mean that North Korea is unpredictable or irrational. To the contrary, the leadership has shown an intent to stay in power and refrains from taking steps it perceives would weaken its hold on the country or lead to outright hostilities with the United States. Similarly, in the Gulf War, Iraq had available missile warheads and gravity bombs loaded with chemical and biological weapons. It is clear from subsequent remarks by Iraqi leaders that they did not use these weapons because of their fear of the consequences, both from the United States and from Israel.

The Clinton-Gore Administration sought NMD to enhance American security against the threat of a few dozen missiles from North Korea while preserving the basic foundation of American-Russian strategic deterrence, including its cornerstone, the ABM Treaty. Even if Moscow and Washington’s differences about modifying the ABM Treaty to allow a limited NMD can be bridged, the crucial flaw in the current American approach is that it would perpetuate the inherent dangers of the Cold War era nuclear deterrence doctrine and stymie now stalled efforts to reduce and eventually eliminate nuclear weapons.

NMD’s reinforcing effect on Cold War nuclear deterrence policy came into clear focus in May 2000 when confidential American “talking points” on NMD were leaked to *The Bulletin of the Atomic Scientists* and *The New York Times*. The documents show that American negotiators have sought to allay Russian fears about a possible American NMD system by ruling out any future reductions in strategic nuclear warheads below the 1,500–2,000 level and encouraging Russia to maintain its nuclear forces on constant alert. NMD might, in theory, reduce the potential future missile threat from North Korea, but it would perpetuate and perhaps worsen the existing American-Russian strategic missile threat, which threatens global security.¹²

Staunch NMD proponents who are even more concerned about potential new long-range missile threats to the West believe that the arms control treaties that have preserved the superpower nuclear balance of terror — from START to the ABM Treaty — are less relevant due to the more amiable American-Russian relationship and Russia’s inability to afford maintaining a large strategic nuclear force. They believe that the United States must pursue the best NMD system possible, at the expense of the ABM Treaty if necessary. Governor Bush and others of this school of thought argue that the United States should demonstrate its benign intentions toward Russia by matching *de facto*

Russian strategic nuclear reductions and reducing the number of American weapons on hair-trigger alert. In this context, they believe even a robust American NMD deployment should not prompt Russia to increase its nuclear arsenal.

In practice, however, this approach is self-defeating. Military planners and political leaders of states with histories of adversarial relations respond to capabilities, not just intentions. While unilateral reciprocal nuclear weapons reductions should be pursued in the absence of prompt implementation of START II and START III, if the United States pursues a significant missile defence system as Governor Bush proposes, Russia would feel compelled to keep a large number of strategic nuclear forces on high alert and increase the number of warheads on their ballistic missiles to preserve their ability to launch an overwhelming counterattack. In addition, China could be expected to increase its deployed strategic nuclear arsenal tenfold.¹³ A heightened Russian posture and accelerated Chinese build-up would lead American military planners and congressional leaders to oppose unilateral strategic nuclear reductions.

Military planners and political leaders of states with histories of adversarial relations respond to the capabilities, not just their intentions.

Given the uncertainties and tension between Washington, Moscow and Beijing, offensive and defensive missile control treaties continue to provide a valuable degree of transparency, confidence and stability and should be the preferred method of achieving nuclear risk reduction and elimination. If technical problems with NMD and political barriers between Washington and Moscow can be overcome, a very limited American NMD might conceivably be deployed without severely destabilizing the American-Russian nuclear deterrent relationship, but could promote dangerous offensive build-ups in other regions, particularly in East and South Asia, and create a floor below which American-Russian nuclear arsenals would not fall. But even the intelligence estimates of the United States suggest that open-ended NMD plans in the absence of ABM Treaty limitations and in the absence of a global regime to eliminate WMD-armed ballistic missiles will foster a dangerous, global action-reaction cycle of symmetrical and asymmetrical actions.

The choice, however, is not simply deterrence or missile defence. There is an alternative approach which merits serious consideration: avoiding further destabilization of the existing deterrence/arms control framework through American restraint on NMD and respect for the ABM Treaty, combined with more aggressive American and Russian arms reductions and a steady transition away from Cold War nuclear deterrence policies. To achieve near-term progress on reducing American-Russian strategic missile dangers, the next American administration should de-link agreement on ABM Treaty changes to allow for a limited American NMD system from full-scale negotiations and agreement on START III. While these talks proceed, both countries should pursue immediate, bilateral de-alerting and de-activation of weapons scheduled for elimination under START II and START III.

Diplomacy and arms control

The technical and political shortcomings of NMD mean that the international community *must* make effective use of diplomacy, trade and assistance, and new mechanisms to control and reduce existing and potential ballistic missiles threats worldwide. Given that North Korea has by far the most developed missile programme among states newly pursuing missile technology, the near-term priority effort should be focused on securing a lasting and enforceable framework agreement freezing the North Korean missile programme. There are clear precedents that provide hope: the 1994 Agreed Framework halting North Korea's known nuclear weapons programme and the current North Korean freeze on its missile flight testing programme.

While North Korea's tough bargaining style and closed society has made diplomacy with Pyongyang unpopular in Washington for many years, leaders in Moscow, Beijing, Seoul and Tokyo have recognized the possibility of a diplomatic resolution to the missile issue. Recent history shows that while North Korea has been a major ballistic missile proliferation irritant, it is interested in a missile deal but is unwilling to give up its programme without some security and/or economic benefits in return.

Russian President Vladimir Putin's discussions with North Korean leader Kim Jong Il on the concept of termination of North Korea's testing, development and production of long-range missiles in exchange for international assistance with satellite launches from the territory of other countries provides a good starting point. In the context of the thaw in North-South Korean relations and a renewed dialogue between Washington and Pyongyang, now is the time for all sides to work together to conclude such an agreement. The next American administration should build on Secretary of State Madeleine Albright's visit to Pyongyang last year.

Over the longer term, multilateral efforts to freeze and reduce the military missile capabilities of all states may be the most effective tool to address missile threats. The Missile Technology Control Regime (MTCR), established in 1987, constitutes the most significant effort in this area. It seeks to control the transfer of WMD delivery systems. These systems include missiles, unmanned air vehicles and related technology capable of carrying a 500 kilogram payload a distance of at least 300 kilometres. Currently thirty-two countries, including Russia and Ukraine, participate in the MTCR; other countries, including China, adhere to its principles (although not necessarily to its lists of material and technology not to be exported).

The MTCR provides a valuable check on missile proliferation, but it is limited in its value. The MTCR is not a treaty but rather a voluntary agreement among countries and does not have clear verification and enforcement mechanisms; it does not address existing ballistic missile arsenals, including the many short-range missiles deployed in developing states and missiles deployed by the nuclear-weapon states; and it is perceived by some nations as discriminatory. MTCR met in October of last year and among other matters, discussed proposals for strengthening MTCR export controls and pre-launch notification for missile and space launches.

MTCR states and other leaders in international non-proliferation efforts should be willing to pursue additional discussions on new proposals and options for building a stronger missile non-proliferation regime. In June 1999, Russian President Boris Yeltsin proposed a Global Control System for the Non-Proliferation of Missiles and Missile Technology (GCS). The Russian government has continued to develop and promote the concept as an adjunct to MTCR. The Russian Foreign Ministry hosted a conference on the GCS proposal in Moscow on 16 March 2000 involving representatives from forty-six states and the United Nations Department for Disarmament Affairs.¹⁴ The GCS calls for: a multilateral missile launch notification regime; an international missile launch data exchange centre; a verification regime to monitor missile launches; and assistance in peaceful uses of outer space to GCS member states renouncing missiles. It further proposes that states that would participate in the GCS that do not possess or that "renounce the possession of missile delivery systems for WMD" should be given assurances by states possessing WMD-armed missiles that they will not be used against them, and if they are threatened or attacked with such missiles, the Security Council and GCS participants will take immediate steps in accordance with the United Nations Charter.

As some observers have pointed out, GCS could be a useful mechanism, but in its current form it fails to require states already possessing ballistic missiles to make progress toward eliminating their missile stockpiles, significantly decreasing the possible effectiveness of such a regime.¹⁵ Rather, governments and non-governmental organizations might explore proposals and options for progress toward the elimination of offensive, military-purpose ballistic missiles, as efforts on the control,

reduction and elimination of chemical, biological and nuclear weapons continues. A useful proposal for such a regime was developed in 1992 by experts at the Federation of American Scientists.¹⁶ That proposal, dubbed Zero-Ballistic Missile (ZBM) regime, outlines a four-stage process involving an international missile control conference, establishment of ballistic missile-free zones, an international agency for ballistic missile control, and an agreement on phased elimination of ballistic missile capability.

Though the development and implementation of a regime like ZBM is an ambitious, long-range endeavour, interim steps can and should be pursued. Progress on the elimination of American and Russian long-range nuclear-armed missiles, country-specific missile development, testing and production freeze agreements, as well as regional initiatives to freeze further missile development, testing and deployment could provide a more stable security environment while building consensus on longer-term solutions.

Conclusions

The interest in ballistic missile defences is nearly as old as the ballistic missile. As long as there is a potential for chemical, biological and nuclear weapons proliferation and access to ballistic missile technology with which such weapons can be delivered, some states will seek to possess ballistic missiles and consider deployment of active theatre and strategic missile defences. The difficult political and technical challenges and risks of implementing complex NMD schemes provide valuable time for the United States and the international community to develop multilateral norms governing existing missile arsenals and the global missile proliferation threat.

The difficult political and technical challenges and risks of implementing complex NMD schemes provide valuable time for the United States and the international community to develop multilateral norms governing existing missile arsenals and the global missile proliferation threat.

Government and non-governmental leaders from around the world should use the next year or two to energetically pursue possible new initiatives to reduce potential new missile threats, and provide stronger leadership on traditional arms control and diplomacy initiatives, which continue to be more practical, cost-effective and reliable than NMD.

Notes

- ¹ For further discussion, see Joseph Cirincione, *Assessing the Assessment: The 1999 National Intelligence Estimate of the Ballistic Missile Threat*, *The Nonproliferation Review*, Spring 2000. Available from <http://cns.miis.edu/pubs/npr/circ71.htm>
- ² Presidential Election Forum: The Candidates on Arms Control, *Arms Control Today*, September 2000.
- ³ Senator Trent Lott et al., *Letter from 25 Senators Opposing START III and ABM Treaty Modifications*, 17 April 2000. Available from <http://www.clw.org/coalition/kylltr041700.htm>
- ⁴ Presidential Election Forum: The Candidates on Arms Control, *ibid*.
- ⁵ See statement by Governor George W. Bush, *New Leadership on National Security*, Washington, DC, 23 May 2000.
- ⁶ *Countermeasures: A Technical Evaluation of the Operational Effectiveness of the Planned US National Missile Defense System*, Report by Union of Concerned Scientists and MIT, 11 April 2000. Available from http://www.ucusa.org/arms/CM_toc.html
- ⁷ National Missile Defense Independent Review Team, *Executive Summary*, 13 June 2000. Available from <http://www.clw.org/coalition/welchsum0600.htm>

- ⁸ *Defending America: A Plan to Meet the Urgent Missile Threat*, a report by the Heritage Foundation's Commission on Missile Defense, March 1999.
- ⁹ Richard L. Garwin, Boost-Phase Intercept: A Better Alternative, *Arms Control Today*, September 2000.
- ¹⁰ Rodney W. Jones, *Taking National Missile Defense to Sea: A Critique of Sea-Based and Boost-Phase Proposals*, A Council for a Livable World Education Fund Report, October 2000, <http://www.clw.org/ef/seanmd.html>; Charles V. Peña, From the Sea: National Missile Defense Is Neither Cheap Nor Easy, *Cato, Foreign Policy Briefing*, No. 60, 6 September 2000.
- ¹¹ Walter B. Slocombe, U.S. National Missile Defense: When and How? The Administration's Approach, *The Washington Quarterly*, Summer 2000.
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- ¹³ Steven Lee Meyers, U.S. Missile Plan Could Reportedly Provoke China, *The New York Times*, 10 August 2000.
- ¹⁴ The summary of the International Global Control System Experts Meeting, Moscow, 16 March 2000 (unofficial translation) is available from http://www.fas.org/nuke/control/mtr/new/GSC_content.htm
- ¹⁵ Jurgen Scheffran, *Time for a Missile Freeze: Options for International Control of Ballistic Missiles*, Economists Allied for Nuclear Arms Reductions, July 2000.
- ¹⁶ J. Jerome Holton, Lora Lumpe and Jeremy J. Stone, *Proposal for a Zero Ballistic Missile Regime*, Science and International Security Anthology, AAAS, Washington, 1999, p. 379–96. Available from <http://www.fas.org/asmp/library/articles/zerobal93.htm>

Fighting fire with fire: missiles against missiles

Christophe CARLE

In what circumstances and how far to proceed with the development and deployment of active defences against ballistic missiles has been debated intermittently, and often passionately, over the last fifty years. Each time, the United States has been at the centre of the issue. The current controversy over ballistic missile defences (BMD) and especially national missile defence (NMD)¹ now ranges far beyond the intra-American debate of the last few years. Today, it seems futile to argue for or against NMD as such. All the arguments have been heard, and those opposing NMD have clearly come out on the losing side in Washington. Even as the outcome of the United States presidential elections remains uncertain as of this writing, the United States will, at some point, deploy NMD in some shape. The timing, the manner and the extent of this deployment do matter, but the postponement announced by President Clinton on 1 September 2000 is just that, a postponement. It is a tactic, not a strategy. In fact, the controversy goes well beyond the issue of missile defences in themselves. What matters is the complex web of strategic consequences of deployment. The debate may be salutary, if only because it puts into sharper focus some of the central dilemmas of global security policy which remain unresolved a decade after the end of post-Cold War euphoria.

Precedents

The first attempted missile interceptions took place during the Second World War, when V-1 cruise missiles were countered with anti-aircraft guns, and by British Spitfires nudging them off-course with the touch of a wingtip. The V-2, with its high speed and ballistic trajectory, posed a more difficult problem. The ancestor of all current ballistic missiles inaugurated a phase in weapons development against which fully effective defences have yet to be found more than half a century later. Since the late 1950s, ballistic missiles have been the fastest and most reliable way of delivering nuclear weapons. Paired together in the offensive, nuclear weapons and missiles were also put to defensive use. Early attempts to intercept long-range intercontinental ballistic missiles (ICBMs) suffered from their inaccuracy, and therefore relied on a nuclear warhead detonating in the area of the incoming missile. This method applied to Anti-Ballistic Missile (ABM) systems developed and deployed during the 1950s, 1960s and 1970s, both in the United States and in the Soviet Union.² Things changed in the early 1980s when technological advances seemed to hold the promise of other (non-nuclear) means of intercepting ballistic missiles. Electronics, computing and space technology were combined in the United States Strategic Defense Initiative (SDI), which was supposed to

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revolutionize strategy and make obsolete the nuclear-ballistic duo. As these ambitions were cut short by the end of the Cold War, anti-ballistic missile interceptors were used for the first time in combat against Iraqi missiles carrying conventional warheads. Progress in surface-to-air missiles originally designed for anti-aircraft use since the 1960s led to systems such as the American Patriot and the Soviet/Russian S-300 with improving capabilities against short-range ballistic missiles. The next stage in the broader ABM debate centred in the early 1990s around a scaled-down version of SDI known as Global Protection Against Limited Strikes (GPALS). The main distinguishing feature of GPALS was that it was post-bipolar in its conception. Developed in parallel with strategies for counter-proliferation, GPALS had a clear North-South rather than East-West orientation. It incorporated SDI technology into a thoroughly different design and purpose, aimed no longer at massive opposing nuclear forces, but rather at small-scale attacks, whether intentional or accidental, nuclear, non-conventional or conventional.

Recently declassified official documents in the United States have shed interesting light on the first instalment of the anti-missile debate in the 1960s and early 1970s. Even published secondary sources, however, already showed instructive parallels and contrasts with the current situation, and illustrated some fundamental continuities in the dilemmas raised by NMD.

In the mid-1960s, it was the Soviets who argued that strategic missile defences were purely defensive, and as such, non-provocative. In an often-quoted article, one Soviet military expert argued that "It is obvious that the creation of an effective anti-missile system merely serves to build up the security of the peaceable non-aggressive state. The creation of an effective anti-missile system enables the state to make its defence dependent chiefly on its own possibilities, and not on mutual deterrence, that is on the goodwill of the other side."³ In the recollection of a veteran Soviet ambassador to Washington, "A defence against missiles, specifically for the protection of civilians, was considered in Moscow as a legitimate matter and was not supposed to arouse suspicion abroad."⁴ At the June 1967 Glassboro summit, "In defending his position on the ABM against (President) Johnson, (Prime Minister Kosygin) came close to losing his temper [...]. In a loud and resolute voice he said 'defence is moral, aggression is immoral!'"⁵ Kosygin also asked: "Which weapons should be regarded as a tension factor — offensive or defensive weapons? I think that a defensive system, which prevents attack, is not a cause of the arms race but represents a factor preventing the death of people. Some persons reason thus: Which is cheaper, to have offensive weapons that can destroy cities and entire states or to have weapons that can prevent this destruction? [...] An antimissile system may cost more than an offensive one, but it is intended not for killing people but for saving human lives."⁶ Such was the way that the first ABM system in the world was presented by the USSR in the mid-1960s.

At the time, pressure mounted for the United States to deploy its own ABM system. After much resistance, Secretary of Defence Robert McNamara announced in September 1967 a decision to deploy a "light" ABM. "The Soviets are now deploying an anti-ballistic missile system. If we react to this deployment intelligently, we have no reason for alarm. [...] This is not in any sense a new issue. We have both the technical possibility and the strategic desirability of an American ABM deployment under constant review since the late 1950s. [...] In point of fact, we already initiated offensive weapons programs costing several billions in order to offset the small present Soviet ABM deployment. [...] We will be forced to continue that effort over the next few years if the evidence is that the Soviets intend to turn what is now a light and modest ABM deployment into a massive one." McNamara stressed that "it is important to distinguish between an ABM system designed to protect against Soviet attack on our cities, and ABM systems which have other objectives", one such objective being "in relation to the emerging nuclear capability of communist China. [...] Is there any possibility, then, that by the mid-1970s China might become so incautious as to attempt a nuclear attack on the United States or our allies? [...] It would be suicidal for her to do so, but one can conceive

conditions under which China might miscalculate [...] our strategic planning must always be conservative, and take into consideration even the possible irrational behaviour of our adversaries [...].”⁷

Therefore, Robert McNamara concluded, “after a detailed review of all these considerations, we have decided to go forward with this Chinese-oriented ABM deployment, and we will begin actual production of such a system at the end of this year.” However, he also cautioned that “the danger in deploying this relatively light and reliable Chinese-oriented ABM system is that pressures will develop to expand it into a heavy Soviet-oriented ABM system. We must resist this temptation firmly [...].”⁸

Seen from abroad, McNamara’s announcement “had almost an air of an anti-climax. His concession to the advocates of the ABM raised a flurry of alarm in the European press, but it had long seemed almost inevitable to anyone prepared to reflect coolly upon the pressure of technological advance and the glutinous pace at which the diplomacy of arms control advanced. (But) what is inevitable is not necessarily innocuous, and it would be wrong to deny that a significant and possibly tragic frontier has been crossed.” Yet, according to the same British analyst, it seemed “hard to commend the way in which the United States Administration handled the announcement. The ABM was one issue on which the disarmament section of the Foreign Office believed it had rallied European opinion and substantially influenced the American debate. The apparent absence of real consultation when the decision was being taken is yet another example of the frequent fate of those (including many other branches of the United States Government) who have to deal with the American military establishment. [...] McNamara should not be surprised by the poor reception given to his argument concerning China. [...] Europeans, who have persistently regarded American fears of China as exaggerated and Chinese pugnacity as largely a result of America’s own policy, can hardly look with favour on measures against China that they fear will disturb the much more important Soviet-American relationship.”⁹

“Sentinel”, the light ABM system announced by McNamara, was reconfigured and re-named “Safeguard” by the Nixon Administration, and was operational for only a few months from October 1975 to February 1976. Unlike today’s NMD, however, the single Safeguard site in Grand Forks (North Dakota) was designed primarily for the protection of Minuteman ICBMs and their associated command centres rather than as a shield for population centres. Unlike today’s NMD, both the Spartan and Sprint interceptors used by Safeguard carried nuclear warheads.

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The sense of *déjà vu* between 1967 and 2000 is striking. Then, as now, controversy within the United States was closely monitored abroad. The identification of the threat against which to turn missile defences was a sensitive issue, and the reactions of friends and foes alike were much discussed. Central to the debate was the concern to avoid opening a new phase in American-Soviet arms racing in the “action-reaction” mode described by McNamara. Likewise, there was controversy over whether the envisaged ABM system would actually work. In the mid-1960s, ABM discussions took place in a setting in which the future of arms control appeared uncertain, and hinged on the willingness of the then-superpowers to advance both towards an agreement on nuclear non-proliferation (which turned out to be the Treaty on the Non-Proliferation of Nuclear Weapons or NPT) and towards negotiations on strategic arms (the SALT talks and the ABM Treaty of 1972). A hotly contested internal American debate leading to the compromise solution of deploying a light anti-missile system; the pains taken to convey the message that the system was not turned against Moscow, but against the possible “irrational behaviour” of certain adversaries; the sense, outside the United States, that such a decision had

become a foregone conclusion; the misgivings of Europeans who had liked to think that their opinions held more sway with their senior ally, all seem like a distant precursor of current dilemmas.

There are of course several crucial differences between then and now. First, the world was bipolar, and despite a generally recognized sense of American superiority in many areas of high technology, a rough equivalence of military potential existed between the two rivals. Not only was the USSR an approximate military equal, but it could be argued to be ahead of the United States in some respects. After all, the Soviets had been the first to test an ICBM only about a decade earlier. Second, in the 1960s, the United States and Soviet positions on ABM were radically different from today. The USSR had begun to deploy an ABM system, of which the United States had none. Third, the relevant technologies for missile interception were far less advanced than they are today. In the 1960s and early 1970s, the weight of scientific opinion in the United States made itself powerfully felt against active ballistic missile defences through numerous public statements and hearings in the United States legislature. In the United States in the early 1970s, Congress, and in particular the Senate (most notably the Senate's Disarmament Subcommittee of the Committee on Foreign Relations presided by Albert Gore senior) were broadly sceptical of the value of BMD.¹⁰ The approval of the decision to deploy Safeguard only went through thanks to the deciding vote of Vice President Spiro Agnew. In late 2000, the question is not so much whether the United States legislature might object to NMD deployment in itself, but rather whether it might reject a proposed system because it considers it too weak.

New dilemmas

In practice, when the United States announces and deploys the first stage of its NMD, it may be perceived as something of a non-event. After so much heat generated by controversy and dire threats by both opponents and proponents of NMD, the result, being less than overnight apocalypse, may well appear like a dud.

In some short-term respects, the impression is likely to be justified. Differences on NMD between Western Europe and the United States (and to some extent, as usual, within Europe) have been amply discussed. Across the Atlantic, different perceptions of threats and vulnerabilities, and the different value attributed to the notion of invulnerability are nothing new. Fears in Europe of transatlantic decoupling are not new either. These fears, however, are not significantly more or less warranted with or without America's NMD. Time and again, since the birth of NATO, the decoupling debate has been vastly exaggerated and the NMD episode could perhaps be no exception. The Euro-American alliance's strength and endurance depends above all on non-military factors of history, culture, values, and on shared interests in policies designed to maintain and further these values. If the existence of this or that weapon system were all that the reciprocal Euro-American security commitment relied on, then that commitment would be *de facto* dead anyway.

If the deployment of NMD by the United States turned out to be enough to put the North Atlantic alliance in jeopardy, it would be as a catalyst of deeper differences rather than as a cause in itself. Decoupling in a military sense and fears of a loosening of extended deterrence are not what should concern Europeans. A more fundamental form of decoupling would hinge on principle rather than on operational military strategy, and whether it occurs or not depends on how the United States carries out its NMD deployment. What actually does concern many Europeans is the prospect of a NMD deployment which involves abrogating the ABM Treaty with Russia, ushers in reinvigorated tensions with Moscow, precipitates an acute crisis in multilateral arms control, and signals a genuine outbreak of unilateralism in the United States. In time, a United States committed

to unilateral supremacy and prophylactic invulnerability, and Europeans attempting to build and enlarge cooperative security through multilateralism, could only drift apart from each other.

On the other hand, an American agreement with Russia on adapting the ABM Treaty to limited NMD deployment would not only make matters easier for Europeans hosting NMD-related facilities, it would also be a welcome indication that some of the concerns about the “death of arms control” had been exaggerated. In view of Russia’s current predicament, it seems possible that some agreement will be struck with the United States on a combination of strategic nuclear arms reductions and accommodation on a limited NMD. The situation could thus be stabilized for some time, assuming that the United States manages to resist future temptation to expand its initial NMD into a heavier defence of the American territory.

The same considerations, however, do not apply to China as many analysts have already discussed.¹¹ Whereas in 1967 Robert McNamara’s announcement of ABM deployment quoted earlier was explicitly turned towards China, the NMD of the early twenty-first century is more ambiguous. The American-Chinese rapprochement of the early 1970s defused the issue, but the odds are against this happening again in the near future. It is often claimed that China would have continued to modernize and increase its strategic nuclear capabilities with or without American NMD. To some extent that may be true. But Beijing will clearly have all the more reason for doing so, and all the more incentive to speed up this process once NMD deployment is announced. If only for this reason, the immediate prospects for a negotiated multilateral agreement banning the production of fissile materials are virtually nil.

Over the longer term, one has to wonder whether concerns about ballistic missile proliferation (exaggerated though they often are) justify building up Russian resentment and accelerating China’s strategic modernization, with obvious effects on the nuclear armament of India, and therefore of Pakistan. In time also, nuclear powers situated in regions of tension will seek anti-missile systems for themselves. After all, the availability of missile-related technology and the speed of its dissemination are among the central tenets of the 1998 Rumsfeld Commission report which was so influential in buttressing the case for American NMD. The United States is for the moment the prime state of concern with regard to NMD proliferation, but it will not be the last. Israel’s American-funded Arrow system is a case in point. Likewise, whether it is India or Pakistan that takes the lead, the other will follow suit. Existing systems similar to the Arrow may be acquired from Russia, future ones may be forthcoming from China, and wholly or partly indigenous devices may be developed. Often labelled as tactical missile defence (TMD) by virtue of the 1997 demarcation agreements between the United States and Russia, such systems could obviously take on strategic significance in different regional settings (much as “strategic” and “tactical” nuclear weapons depend for their categorization on geographical context rather than on any of their inherent characteristics). Undoubtedly, these future NMDs (whether dressed up as TMD or not) will, in their turn, be described as purely defensive and as stabilizing. They will also be claimed to have no justifiable impact whatsoever on the adversary’s levels of nuclear armament. What a relief.

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Shield or sieve—and does it matter?

In all previous episodes of the missile defence debate, a recurring question has been whether BMD would work as well as advertised, if at all. The difficulties with mid-course and terminal missile interception are well known. So are the mixed results of tests conducted so far. It is common for

opponents of missile defences to argue that the systems in question will not work. Each failed test of components or of complete systems is met with gleeful funeral orations by BMD opponents, and every success is greeted by proponents as proof that the shield can and will work.

The proponents of NMD have an obvious point. Whatever the results of the tests carried out to date, NMD will perform at least adequately, and perhaps well, against the missiles it is designed to intercept. Decades of research and development have been carried out, and many lessons learned. Computing, electronics and space technology have advanced immensely since the 1960s, and it would take a singularly autistic hermit not to recognize the ever-growing extent of American military-technological achievements.

Most of all, whether or not NMD performs up to the standards held up by its critics is quite irrelevant. What does count is that NMD will work well enough to be deployed, and well enough to be taken seriously by the rest of the world. The fact that some “smart bombs” and cruise missiles can and indeed occasionally do go astray does not cause anyone to dismiss them as insignificant. The same will apply to NMD, even if it is less than demonstrably 100% effective (as are all complex systems designed, built and operated by humans in the real world). Many proponents of NMD recognize and accept these limitations. Awkwardly, however, they usually fail to grant the same toleration of imperfection to arms control, non-proliferation and disarmament agreements.

Even more irrelevant, seen from abroad, is the American debate on the price tag of NMD. Numerous billions of dollars have already been spent during decades on BMD research and development by the United States. The sums mentioned for NMD by official sources and in the literature are undeniably considerable, but by the mind-numbing standards of contemporary American military outlays, they are nothing extraordinary. If its government, legislature and tax-paying citizens so decide, the most prosperous nation on earth can certainly afford NMD.

It is also objected that NMD is vulnerable to countermeasures and decoys. It is indeed interesting to note that in many dire prognostics of future hostile ballistic missile proliferation, the proliferators are assumed to have been briefed by NMD planners and are expected to adjust their behaviour accordingly. Seemingly, the proliferators should deploy treasures of engineering to produce rapidly the long-range missiles that justify NMD deployment, but their proliferating prowess should miraculously stop just short of equipping these missiles with the countermeasures and decoys to confuse and defeat NMD. In any case, over time, the United States can be counted on to devise countermeasures to such countermeasures, should they appear. And the cycle continues. Likewise, the increasingly frequent proposals for ship-based boost-phase intercept systems supposed to avoid the shortcomings of terminal and mid-course interception, should be mindful of the vulnerability of the naval platforms themselves. The tragic incident of the USS Cole springs to mind.

Another objection is that NMD cannot deal with smuggled nuclear explosive devices (suitcase-bombs, pick-up trucks, cargo ships, and so on). Here, again, the objection is irrelevant, and it makes no sense to criticize NMD for not doing what it was never intended to do. If smuggling is a priority, then invest in anti-terrorism (which opting for NMD does not necessarily exclude). Buy a washing machine if you want to, but instead of bemoaning its inability to cook dinner, buy an oven.

Misguided optimism

It is sometimes claimed that anti-ballistic armaments can be conducive to disarmament. Let us leave aside for the moment the built-in contradiction. As levels of nuclear arsenals are reduced and get close to zero, anti-ballistic capabilities, it is argued, would strengthen confidence by reducing

fears of vulnerability. Supposedly, nuclear-armed states would thus feel safe behind anti-ballistic shields and pursue deeper and deeper reductions. This overlooks the fact that the leap of faith involved in getting at all close to zero nuclear weapons would presuppose far greater confidence than any anti-ballistic systems could provide. The most one could possibly concede to the argument is that in such an optimistic disarmament outlook, the anti-ballistic factor would be negligible, and perhaps altogether irrelevant. But the prognostic is so far removed from current and envisageable circumstances that its relevance to the real world is nil. Worse, this naive scenario, if it were given any credence and effect, would precipitate exactly the reverse of the disarmament objectives it purports to encourage. At most, one could perhaps look upon deployed ballistic missile defences with benign neglect in a world in which powerful disarmament dynamics held sway. But in the real world in which disarmament is — at best — in a lull and in which international suspicions are running high, resort to anti-ballistic armaments will only encourage another round in the offence-defence competition. If disarmament were surfing on a triumphant tidal wave of mutual trust among the major powers, anti-missile weapons might conceivably do little harm — but arms control is solidly stagnant, if not ebbing away. Adding weapons to weapons is at least coherent for advocates of militarized individualistic security and national supremacy. Coming from partisans of nuclear non-proliferation and disarmament, the argument is a curious error of judgement.

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A more common argument consists of seeking solace in the prognostic that anti-ballistic weapons will not — indeed, cannot — cause an arms race. The United States is so much more advanced and powerful in military terms than any other country, it is held, that no other state in the world could presume to compete against it. It follows that for lack of credible competitors, it makes no sense to refer to an arms race. An arms race, it is assumed, is a race only if it opposes approximate equals in military capabilities: the United States and the USSR engaged in an arms race during the Cold War. No such thing could happen today nor in the foreseeable future. With Russia downtrodden, impecunious and at pains to even control the decay of its existing nuclear forces, with China possessing a mere twenty-odd inter-continental ballistic nuclear delivery systems, the very notion of an arms race is held to be irrelevant, and bound to remain so. Leaving aside the open or unavowed motivations behind such statements, their coherence leaves much to be desired.

This argument rests entirely on adopting the Cold War as the one and only pattern of any arms race. Not only is it backward looking, but it is also shallow, seemingly assuming that history began and ended with the Cold War. History is actually replete with examples of armed competition between two or more parties of far from equivalent capabilities. A race is a race, even if it opposes Mr Michael Johnson to a collection of outclassed competitors over 400 metres. In today's globalizing world, a technological race is on, and has clear implications for military technology (whereas in the past, military research and development led and civilian applications followed, the reverse holds now and for the foreseeable future).

The argument is static. It assumes that the existing distribution of power is bound to remain as it stands in the year 2000. Nothing warrants such an assumption. Russia will not remain in its current disarray forever. Its immense human and natural resources, put to purposive use, will someday confound those who have become used to looking down upon Moscow. Whether that evolution is cooperative or confrontational is what matters. Even without the stimulus of anti-missile armaments, Russia, however impoverished, retains the option of allocating more of its resources to two of the activities it knows best: even at the worst of times (unless centrally planned communist management was ever supposed to be resource-efficient) Russian excellence in matters of rocketry and warheads was and remains a matter of fact, not speculation. So is China's vastly untapped potential.

In competitions with as few rules as arms racing, shortcuts are the name of the game for those who would otherwise be left behind. A country that boldly advertises its own quest for “full spectrum dominance” in the military realm — and has a credible claim to just that — cannot expect others to reply in kind. For the time being, no one can. But in time, Russia could, and in time, China will. For others who might not see such supremacy as necessarily benign, adaptations will be necessary — within the bounds of their capabilities. Faced with the complete impossibility of even beginning to catch up in any significant sense with the United States, some will take the obvious path: shortcuts. In the military-technological realm, these shortcuts are known as WMD proliferation. Non-proliferation 'rules of the road' exist to prohibit or at least restrict such shortcuts, but they are far from perfect. In fact, they will be gravely weakened by the tangible demonstration by the most powerful nation on earth that it regards non-proliferation as useless. If even this contemporary leviathan feels vulnerable enough to equip itself with NMD,¹² lesser nations can scarcely be expected to entrust any significant measure of their security to arms control, non-proliferation or disarmament treaties.

Euphemisms

Whatever their future performance, ABM, NMD, BMD and TMD have already proved fearsomely effective as weapons of rhetoric. They have a clear built-in attractiveness. All are defences. Defences are inherently less objectionable, more legitimate and benign than means of offence or attack. The widespread re-naming of war ministries around the world as ministries of defence in the

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course of the twentieth century illustrates this connotation. Defence, and more particularly national or collective self-defence, has an undeniable public appeal. Advocates of anti-missile capabilities have the inherent semantic advantage. What could possibly be wrong with seeking to protect oneself, and one's friends and allies? But defence and offence are inextricably linked in strategy. Solid defences can be — indeed should be — part and parcel of any credible offensive or coercive strategy. Confidence in the attack, in the intimidating gesticulation of power and in the ability to coerce or compel others into taking a given course of action are all buttressed by robust defences. The distinction is a matter of intentions, and the credibility of intentions is in the eye of the beholder. A parallel is the ever-unresolved distinction between “stabilizing” and “destabilizing” military capabilities. One can argue that the difference is context-dependent. In practice, however, the only guiding axiom which holds sway is that “any given weapon is stabilizing in my own hands, and destabilizing in anyone else's”. Inescapably, anti-missile systems are weapons. Anti-ballistic devices are armaments. How they are perceived is subject to all the usual intricacies and ambiguities. Whatever the intentions of whoever deploys such systems, perceptions matter more, because whatever is (rightly or wrongly) perceived as real becomes real in its consequences. A given state's deployment of an anti-missile capability, whatever its actual intentions, can be perceived by others as a shield behind which to wield the sword more effectively and with greater impunity. Anti-ballistic weapons, anti-missile armaments, are elements in the strategic equation that nothing distinguishes qualitatively from other weapons systems.

Strategic BMD has taken on several successive guises: nuclear missiles aimed at other nuclear missiles in order to protect selected cities or military installations; nuclear missiles aimed at other nuclear missiles in order to protect yet other nuclear missiles (one of the culminating points of Cold War arms racing); and lately, conventional missiles aimed at a few conventional, WMD or nuclear missiles in order to offer some protection to the national territory. In a world of nation-states, a sovereign choice can of course be made to resort to such means for purposes of national defence. But this choice does have broader consequences — whether intended or not — and attempting to

reconcile it with arms control, non-proliferation and disarmament is plainly absurd. Under the circumstances, urgent attention needs to be given to all proposals, past and recent, for multilateral transparency and control on ballistic missiles including early warning, detection and tracking, which is in fact one area in which much technology developed for BMD could be put to constructive use. Lastly, the experience, strengths and weaknesses of the Intermediate-range Nuclear Forces Treaty and of the Missile Technology Control Regime need to be comprehensively reassessed.

Notes

- ¹ This paper focuses on NMD, although some reference is made to tactical missile defence (TMD).
- ² An announcement was made in 1998 that the Russian Federation had taken off the nuclear warheads from interceptors at the Moscow AMB site.
- ³ Nicolai Talensky, Anti-missile systems and disarmament, *International Affairs* (Moscow), no. 10, October 1964, p. 18.
- ⁴ Anatoly Dobrynin, *In Confidence; Moscow's Ambassador to America's Six Cold War Presidents*, New York, Times Books, 1995, p. 153.
- ⁵ *Ibid.*, p. 170.
- ⁶ Prime Minister Alexei Kosygin, as quoted in David Yost, *Soviet Ballistic Missile Defence and the Western Alliance*, Cambridge, MA, Harvard University Press, 1988, p. 98.
- ⁷ Robert McNamara, American ABM deployment, *Survival*, November, 1967, pp. 342–46. (The text is an abridged version of the United States Secretary of Defence's speech of 18 September 1967.
- ⁸ *Ibid.*
- ⁹ Laurance Martin, The American ABM decision, *Survival*, December 1967, pp. 384–86.
- ¹⁰ For a useful account, see Ernest J. Yanarella, *The Missile Defence Controversy; Strategy, Technology and Politics, 1955–1972*, University Press of Kentucky, 1977.
- ¹¹ See, for example, Dean A. Wilkening, Ballistic missile defence and strategic stability, *Adelphi Paper* (Oxford), no. 334, May 2000.
- ¹² See for example, arguments such as the following: "... the main threat arises not from the United States being too powerful but from its being perceived abroad as weak and irresolute." Frank J. Gaffney Jr., in *American Power—For What?*, a symposium published in *Commentary*, January 2000, p. 27.

Defence, deterrence and cultural lag

James M. SKELLY

Ronald Reagan was right, although it wasn't apparent to me at the time. When he said, "I've become more deeply convinced that the human spirit must be capable of rising above dealing with other nations and human beings by threatening their existence," he was trying to make American strategic military policy accord with the fundamental moral positions of the overwhelming majority of Americans and most other citizens of the world. In the speech of 23 March 1983 that gave birth to the Strategic Defence Initiative (SDI), Reagan, much to the consternation of many defence intellectuals and several of his own advisors, was attempting to break out of the moral and political conundrum that had been created by the strategy of nuclear deterrence. He asked, "Wouldn't it be better to save lives than to avenge them?" The common-sense answer of most individuals was an unequivocal, "Of course!" What normal person could deny that it would be better to defend than avenge, especially when so many of the lives lost through nuclear vengeance would be those of children and other innocents.

Reagan envisioned a post-deterrence world where "free people could live secure in the knowledge that their security did not rest upon the threat of instant retaliation to deter a Soviet attack" and where "we could intercept and destroy strategic ballistic missiles before they reached our own soil or that of our allies." Unfortunately, his own simple common-sense instincts could not prevail in a political environment where deterrence had provided overwhelming legitimacy to an extensive array of hardware and associated institutional structures. A defensive military orientation coupled with deterrent nuclear forces would undermine deterrence as a strategy. The reason was that the combination of the two resulted in a war-fighting capacity that inevitably would lead to a politically and militarily destabilizing arms race, or so the argument went.

Reagan's defence initiative therefore, initially resulted in contortions in the logic of strategic policy as administration officials tried to avoid choosing deterrence or defence as the core concept around which American military strategy and forces were organized. Reagan himself was clear about the choice a few days after the initial Star Wars speech, when he told the National Space Club, "We're not discussing a concept just to enhance deterrence, not just an addition to our offensive forces, but research to determine the feasibility of a non-nuclear defence system: a shield that could prevent nuclear weapons from reaching their targets." Casper Weinberger, then Secretary of Defence, tried to put the matter to rest by asserting that SDI would "enhance" deterrence, not undermine it,

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and Reagan himself in his 1988 State of the Union speech would ultimately be forced to conclude that SDI was a way to “offer the world a safer, more stable basis for deterrence.” Nonetheless, the contradiction remained latent, and now in the past few years it has come to the fore again with the debate around National Missile Defence (NMD).

Deterrence forever

As we know, the choice of defence or deterrence was for a time in recent years rendered irrelevant as both the costs and technical unfeasibility of SDI undermined political and fiscal support for the initiative, while the end of the Cold War seemed to make strategic policy a peripheral concern. Nuclear weapons stockpiles were being reduced, forces were no longer on alert, and treaties and understandings with a Russia more benign than the former Soviet Union seemed set to define the 1990s. To the extent that any direct external threats to the United States might exist, there was a vague sense in the public mind that a reduced form of nuclear deterrence was acceptable—but only as the world made the transition to new security arrangements in which many people hoped nuclear weapons might play no role at all. Of course such a transition was not meant to be, and the United States Government began to make it clear that it had no intention of giving up nuclear weapons or their centrality to American political and military strategy. Nuclear deterrence would continue even though the threat upon which it was premised had become ever more ephemeral.

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In a statement to a Senate Subcommittee in early 1997, the Under Secretary of Defence for Policy, Walter Slocombe, made clear that “nuclear weapons continue to play a critical role in deterring aggression against the United States, its overseas forces, its allies and friends.” The threats that would be deterred by American nuclear weapons were of two sorts. First, although Slocombe said that the United States did not regard Russia “as a potential military threat under its present, or any reasonably foreseeable government”, he and his colleagues had concluded that, “We cannot be so certain of future Russian politics as to ignore the possibility that we could need again to deter the Russian nuclear force.” For those who might think that Slocombe’s argument was not particularly compelling because he was essentially saying that although Russia is not a threat in the foreseeable future, nuclear weapons were needed to deter it because it might be a threat in the unforeseeable future, he conjured up the second threat — the threat from so-called “rogue” states. Here Slocombe asserted that a survey of the list of such states with potential programmes for the production of weapons of mass destruction (WMD) leads one to conclude that nuclear weapons were a deterrent to threats that the scoundrel states might otherwise be tempted to make.

The naïve reader might ask exactly why deterrence of the sort Slocombe was talking about became so central to American policy and why it still seems necessary when the justification appears so thin in comparison to the past. After all, it is received wisdom that nuclear deterrence worked during the Cold War, and therefore perhaps Slocombe was right that it is still working in the new environment of threat and security. To explore this question, it is necessary to engage in a cursory review of the development of nuclear weapons and the theory of their use through non-use, or deterrence.

Nuclear weapons were the logical end point in the development of sophisticated new weapons systems by states in the late nineteenth century. As William McNeill has shown in *The Pursuit of Power*, the development of new weapons’ technologies began to stall in the 1870s because the costs of R&D became prohibitive for private companies. Thus, when the British Admiralty took the lead

in developing the naval quick firing gun in the early 1880s, a precedent was established for direct state involvement in the development of ever-more technically advanced and destructive weapons systems. The Manhattan Project and the atomic bomb were the ultimate realization of this involvement in weapons' development. With the successful test of the bomb on 16 July 1945, the ultimate weapon of destruction had been created, and the world would never be the same.

Nuclear weapons and cultural lag

Following the use of atomic weapons against Japan at the end of the Second World War, great efforts were expended on understanding the implications of the bomb. How should one think about it? Many people — Curtis LeMay comes quickly to mind — considered the bomb as just another weapon, though with wondrously more destructive power. LeMay and others planned for pre-emptive or preventive war with the bomb as the centrepiece of their strategy during the late 1940s and into the 1950s. LeMay, as commander of the Strategic Air Command, apparently continued to plan for a first-strike preventive war against the Soviet Union even into the early 1960s, and attempted to provoke the Soviets during the Cuban missile crisis of 1962 so that such a strike could be launched.

Others saw the bomb as unlike any other weapon, and therefore attempted to remove it from the arsenal of offensive weapons that the United States or any other nation could rely on. The Baruch Plan, for example, would have placed the bomb under international control. President Truman, who fostered the Baruch initiative, was among those most reluctant to continue to place the bomb in the United States offensive arsenal. The destruction of Hiroshima and Nagasaki had left him with an abiding sense of the horrors of using atomic weapons. Henry Wallace recorded in his diary that "Truman said he had given orders to stop the atomic bombing. He said the thought of wiping out another 100,000 people was too horrible. He didn't like the idea of killing, as he said, 'all those kids'."

In a discussion with David Lilienthal two years later, Truman also said "I don't think we ought to use this thing unless we absolutely have to. It is a terrible thing to order the use of something that is so terribly destructive beyond anything we have ever had. You have got to understand that this isn't a military weapon. It is used to wipe out women, children and unarmed people, and not for military use. So we have to treat this differently from rifles and cannon and ordinary things like that."

Bernard Brodie however, sketched the outlines of a theory of the bomb early on that struck a middle ground between those who wanted to use it and those who wanted to give it up. Brodie's analysis would provide the core of what would become known as strategic nuclear deterrence. Essentially, like those who thought that it should be put under international control, Brodie argued that the bomb couldn't be used as offensive weapons had in the past, and that henceforth the purpose of the military was to avert war rather than engage in it. In arguing that the only viable function for atomic weapons was to threaten their use as a deterrent, Brodie indicated that the United States should "take all possible steps to assure that multilateral possession of the bomb should that prove inevitable, be attended by arrangements to make as nearly certain as possible that the aggressor who uses the bomb will have it used against him." In other words, in a bow to those who didn't want to give up the bomb, Brodie was saying keep it, but only threaten to use it.

Despite the constraints on the use of the bomb, it would be naïve to think that those who had associated themselves with the coercive power of the state might simply have given up nuclear weapons as some proposed at the end of the Second World War. As Stanley Kubrick demonstrated with the blackest of humour, there were too many people in key positions, like LeMay, who loved the bomb. If one reflects on it, this affection was quite understandable. After centuries of seeking the

ultimate in destructive weaponry, the United States was finally the nation that had created it. Of course they were not going to give it up then, or even now, though the possibilities of persuasion in this later regard are a bit more promising today than previously.

The choice in the first half-century of the bomb's life was quite simply between its use, as LeMay and others would have had it, or its non-use, as those who ultimately argued for deterrence

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wanted, despite their many confusions. Their confusions are instructive because they demonstrate that deterrence has functioned primarily as a transitional theory of nuclear weapons. From the moment its explosive potential was made manifest, a good number of people recognized that the introduction of this new mechanism would require profound adaptation at a cultural level. Deterrence helped to check the attitude of those who did

not recognize the need for cultural adaptation — those who wanted to use the device as though it had not profoundly changed the culture of war and international politics. We should be thankful.

In his seminal book on social change written in the early part of the twentieth century, William Ogburn assessed how American culture had adapted to the changes in material conditions wrought by the Industrial Revolution in the later half of the nineteenth century. He argued that the rapid change in material conditions had resulted in numerous examples of what he termed "cultural lag". Ogburn noted that although changes were occasioned in the adaptive culture when new technologies were introduced, the changes "do not synchronize exactly with the change in the material culture." Instead, he observed, "There is a lag which may last for varying lengths of time, sometimes indeed, for many years." During this period of maladjustment, Ogburn also noted that "the old adaptive culture ... hung over after the material conditions had changed," and that even though "it was being modified some as time went on" the modification was never sufficient "to meet the new conditions even approximately."

The process of adaptation to nuclear weapons has been going on now for over fifty years, but the old adaptive culture — "pre-atomic thinking", Bernard Brodie called it — still hangs on. To their credit, Bernard Baruch, Brodie and others rather quickly realized that nuclear weapons were going to require cultural adaptation. They did their best to prevent catastrophe of the sort that LeMay would have induced from his inability to see that nuclear weapons required such a profound adaptation — that they were not rifles and cannons. However, their efforts were at best half-measures. They forestalled catastrophe, but we are still lingering on the brink because deterrence did not allow a fundamental cultural adjustment to nuclear weapons.

Although it may have saved us from the hubris of LeMay and others, deterrence has brought about only a modification in the old adaptive culture. It therefore has been inadequate in helping us to adjust to the fundamentally new conditions that the introduction of nuclear weapons has wrought and, it can be argued, deterrence has now created an additional obstacle to that adjustment. Deterrence unfortunately continues to treat nuclear weapons like rifles and cannons, albeit powerful ones that we consequently keep locked up in the cupboard but still threaten to use if any one steps on the front porch.

Challenges to deterrence

A sampling of the diverse challenges that deterrence has faced over the years provide evidence that it is not adequate to overcoming the significant cultural lag nuclear weapons have engendered. Despite the web of rationality that Brodie and other analysts tried to weave in their elaboration of

strategic deterrence, its status as a transitional theory meant that it would be subject to attack both from those who wanted to return to the culture of the past, as well as those who saw it as forestalling a more complete cultural adaptation. In the 1950s, for example, deterrence as expressed in the policy of massive retaliation was attacked from within its own system of logic by the strategic analyst William Kaufmann. Kaufmann suggested that the policy lacked credibility since it could not deter small-scale aggression. The result of his and Maxwell Taylor's critique in *Uncertain Trumpet* was the build-up in conventional forces that ultimately went to ground in Viet Nam.

Similarly, deterrence inevitably led to destabilization of the very equilibrium in weapons that it was supposed to maintain because it meant "repeated stabilizations at increasingly higher levels", as Theodore Draper noted, thus fostering an arms race. The American shift to counterforce strategy in the mid-1970s provides an example of this paradox at work. Essentially, the argument that was made was that while the United States had been committed to deterrence as equilibrium, the Soviet Union was then seeking overwhelming superiority. Although the argument might have been that the Soviets were merely seeking to make their own deterrent credible, the subsequent American move toward counterforce weapons was justified as an effort to again make the American deterrent credible.

In a similar vein, Kenneth Waltz, again following the logic inherent in deterrence, has argued that nuclear proliferation may be a positive advance. "Peace," Waltz states, "has become the privilege of states having nuclear weapons, while wars have been fought mainly by those who lack them." Therefore, "the gradual spread of nuclear weapons is better than either no spread or rapid spread." If you accept the fundamental premise of nuclear deterrence, Waltz' position makes eminent sense.

Jonathan Schell, who is among those who think that deterrence has forestalled a more thorough cultural adaptation, plays out the logic of deterrence in a manner similar to Waltz, but with an opposite conclusion. Schell argues that deterrence is an obstacle to the abolition of nuclear weapons because it fosters proliferation. So much so that he thinks deterrence is a misnomer — it should instead be called "proliferance."

The continuing challenge of the American Catholic Bishops over the past twenty years lies in the fact that the bishops, unlike many others, did recognize that deterrence could only be justified as a transitional theory. In their 1983 pastoral letter, "The Challenge of Peace", the bishops quoted Pope John Paul II to the effect that, "In current conditions 'deterrence' based on balance, certainly not as an end in itself but as a step on the way toward a progressive disarmament, may still be judged morally acceptable." Ten years later the bishops reaffirmed that "progressive disarmament" meant "a commitment to the elimination of nuclear weapons, not simply as an ideal, but as a concrete policy goal." In 1998 in response to the Clinton Administration's further institutionalization and reliance upon deterrence, as articulated by Walter Slocombe and others, seventy-five of the American bishops denounced deterrence unequivocally. In a public letter they stated, "Nuclear deterrence as a national policy must be condemned as morally abhorrent because it is the excuse and justification for the continued possession and further development of these horrendous weapons."

Choices: deterrence, defence and abolition

Given the many contentious responses to deterrence over the years, it is little wonder that policy-makers have regularly turned their attention to defence. The ABM initiative of the late 1960s and early 1970s, SDI, and now NMD have in varying ways held out hope of escaping from the conundrums associated with nuclear deterrence. If we want to overcome the profound cultural lag that remains evident in current policies surrounding nuclear weapons, it would seem clear that a

strong defensive posture brings us much closer to accomplishing that. However, and this is a big qualifier, if defence is chosen, deterrence must be scrapped and nuclear weapons eliminated as part of the arsenals of the states that possess them. Under no circumstances can “pre-atomic thinking”

Under no circumstances can “pre-atomic thinking” be reinforced by allowing nuclear deterrence to coexist with defensive systems.

be reinforced by allowing nuclear deterrence to coexist with defensive systems. Extraordinary political will on the part of the nuclear weapon states’ political elite will be necessary. There will have to be discussions of the missile defence “haves and have-nots”, the implications of a partial defence system, the problems of decoys, etc. Deterrence advocates will use every possible theoretical weakness to justify continued adherence to the policy. We must be clear that those who maintain an attachment to nuclear weapons will use every excuse to hold on to as many as they can — and will be terrified to relinquish them completely, we should therefore expect ever more desperate claims as to why they are still needed.

Undoubtedly, even if the United States were to give up nuclear weapons and deterrence and focus its strategic policy solely around defence, nuclear weapons will maintain a lingering presence in other parts of the world. Many of the other nuclear weapon states are sure to demonstrate their reluctance to give up this magnificent destructive power. On the international front, the United States will therefore need to engage in unprecedented diplomatic efforts to bring about compliance to a new treaty regime that bans the production, deployment and use of new systems, as well as the elimination of existing weapons. Sharing defensive systems will undoubtedly be part of such an agenda, and will be especially applicable to the potential nuclear hot spots in the Middle East and North East Asia, as well of course, in the continuing confrontation between India and Pakistan. We must remember that, even in a regional context, deterrence fosters proliferation.

The longer term goal must be to demonstrate the disutility of the current international security regime and the weapons that inform that regime. The lag in the culture of security must be overcome — in this regard, deterrence in the present, as well as missile defence in the future, is inadequate to that task. The likely threats in the medium term will not come from nuclear-tipped missiles, but from new weapons of mass destruction. As Richard Betts noted nearly three years ago, “Traditional deterrence will not stop a disgruntled group with no identifiable address from striking out at America,” or anywhere else for that matter—the attack on the USS Cole is a profound example. The deeper lesson from groups such as Japan’s Aum Shinrikyo, as Robert Lifton has argued, is that “weapons-centred projects take on an illusion of sanity” even in the hands of so-called ‘stable’ leaders when in fact it is merely a deep illusion.

It often seems that there is little hope that we will rid the world of nuclear weapons, but if we really want to step back from the brink, we all know that we cannot simply wish them away. Many of the political elites in the nuclear weapon states will continue to cling to the bomb — they really don’t want to give it up. If missile defence can loosen that attachment, it makes sense to discuss it. At the same time however, we must recommit ourselves to the more profound adaptation necessary. As Freeman Dyson said in the concluding paragraph of *Weapons and Hope*, we need “a worldwide awakening of moral indignation pushing the governments and their military establishments to get rid of these weapons which in the long run endanger everybody and protect nobody.”

Note

¹ Some of the perspectives in this article reflect a further development of ideas that Hugh Mehan, Charles Nathanson and I articulated in several previous works. These include “Nuclear discourse in the 1980s: the unravelling conventions

of the Cold War”, of which we were all authors, published in *Discourse & Society*, 1990 (SAGE, London, Newbury Park and New Delhi) vol. 1, no. 2, pp. 133–65; “Reykjavik: The breach and repair of the Pure War Script”, by Mehan and Skelly, published in *Multilingua*, 1988 (Mouton de Gruyter, Amsterdam) vol. 7, no. 1/2, pp. 35–66; and J Skelly, “Power/Knowledge: The Problems of Peace Research and the Peace Movement”, published in *A Just Peace Through Global Transformation*, Chadwick Alger and Michael Stohl, eds., 1988 (Westview Press, Boulder, CO).

Confidence-building measures related to the ABM defense problem

Viacheslav ABROSIMOV

Due to ongoing missile and missile technology proliferation, interest in the problems of anti-ballistic missile (ABM) defence in various countries is growing. ABM defence is a domain that is extremely sensitive to the security interests of all countries, especially those possessing missiles to deliver weapons of mass destruction. If two countries maintain relations of deterrence, then the development of an ABM system by one of them introduces a disequilibrium in such relations. A peaceful way of resolving the conflicts arising from ABM development is to conclude appropriate treaties. As a rule, by concluding treaties the parties pursue entirely different goals and are guided in their policy by the general principle that “what is not forbidden is allowed”. For this reason, in principle, the treaties can be either of a restrictive or prohibitive character.

Definition

Confidence-building measures (CBMs) are the collective or unilateral actions of states aimed at increasing transparency and predictability of another state’s behaviour in the area of concern, a forswearing of uncoordinated actions that could damage another state through the implementation of provisions in international agreements.

CBMs are very important in the elaboration of many international agreements. In this connection the parties’ representatives are under pressure of multiple conditions and circumstances in the negotiating process. As a rule, the subject matter of the talks can be conditionally divided into four areas describing the parties’ will and ability regarding the subject of contention. They:

- can and want to come to an agreement;
- can but do not want to come to an agreement;
- want but cannot come to an agreement; or
- do not want and cannot come to an agreement.

In the first case the parties often succeed in working out certain obligations, and they express readiness to fulfil them. In the last case the circumstances outweigh the aspirations of the parties, so this area is excluded from or remains beyond the negotiation. In the second and third cases various effective CBMs can be introduced.

CBMs are clearly differentiated from limitations. The main distinction is that CBMs demand trust and that they are not completely verifiable. The fulfilment of any CBM condition and the assurance of the necessary guaranties are incumbent on the party that itself assumes corresponding obligations. In this context CBMs aim to lower substantially the requirements of the inspection/control verification mechanism by the parties of the treaty obligations.

CBMs have certain informal requirements. They are not described in international documents but rather always implicit in establishing and fulfilling the measures mentioned. Several of the most important requirements are mentioned here. Every party accepts CBMs *voluntarily* since it is interested

Proportionality is an indispensable condition of finding a balance between the necessary obligations of the parties and the significance of the expected outcomes of the CBM.

in their fulfilment by another party and hence it promotes the strengthening of their own national security. *Proportionality* is an indispensable condition of finding a balance between the necessary obligations of the parties and the significance of the expected outcomes of the CBM. CBMs should demonstrate a high degree of *transparency*. Yet CBMs are often not clearly formulated

in practice. Many variants of their realization are admitted, which creates a possibility of their ambiguous interpretation. A party that has accepted CBMs is supposed to fulfil them without fail. Unfortunately, the uncertainties and ambiguities related to the CBM often lead to concerns related to its observation and as a consequence, to new negotiations addressing these concerns. CBMs can be *legally binding*. However, unlike the strict obligations of treaties, this condition is not indispensable. In practice, they are often established during talks between top leaders of the countries concerned.

There are several different types of CBMs. *Declarations* are an official statement of the parties' intentions regarding the concerns of another country or countries. It can be expressed through the statements of officials, organizations or others. A state voluntarily binds itself by certain obligations that are determined by its national interests. For example, the United States and the USSR/Russian Federation have been exchanging statements since 1972 about the fact that no activities contrary to the 1972 ABM Treaty have been carried out.

Limitations are the imposition of some unverifiable or partially verifiable restrictions concerning the subject matter of the talks and the countries' obligations to observe these restrictions. *Inspections* guarantee regular access by the other party's representatives to the physical objects or locations related to the subject of the talks. Thus, within the Intermediate-range Nuclear Forces Treaty one country's representatives are directly admitted to the missile-producing factories of the other for control missions.

Registration obliges that sensitive activities are indicated officially in advance. For example, according to the Convention on Registration of Objects Launched into Outer Space (1975), every country voluntarily registers the launches of its spacecraft in an established manner.

Advance notification of the other country when a country plans to undertake an activity that is capable of causing concern is another useful type of CBM. The best example of this type of CBM is a long-term activity of the Russian Federation and the United States of notifying each other of their launches of strategic ballistic missiles.

Information exchange provides the other party with factual data about a type of activity that is capable of causing concern. For example, according to the agreements reached between the United States and the Russian Federation in 1997 on the demarcation between strategic and non-strategic ABM systems, after their ratification each of the parties shall provide the other with the information on the plans and programmes for the development of non-strategic ABM systems.

Observation ensures the possibility for one party to view (with the help of the relevant national technical means or NTM) an object capable of causing concern. Thus, paragraph 2 of the ABM

Treaty's Article XII contains an obligation of the parties not to hinder the other country's NTM. *Moratoria* are a voluntary restriction of a country to carry out a particular activity. Presently, for example, the Democratic People's Republic of Korea has imposed a moratorium on missile launches. *Guarantees* are the provision of certain promises to a country that diffuse its concerns.

It is assumed that when parties work out CBMs, these measures are to become effective. That is why CBMs in themselves make sense only alongside evaluation of their effectiveness. Naturally, each party would like to be sure that the opposite party complies with its commitments as outlined in appropriate agreements. Each contracting party generally evaluates independently the degree of the other party's compliance.

CBMs in themselves make sense only alongside evaluation of their effectiveness.

A CBM's efficiency depends on the damage that could be inflicted on State B by State A in case of the non-compliance of the latter with its CBM commitments. In general such damage defies being expressed in quantitative terms. Roughly, the effectiveness of a chosen combination of CBMs may be written as the product of two factors:

$$E = E_{(B-A)} * E_{(A-B)}$$

- where $E_{(B-A)}$ is the degree of recognition by Party B of the efficiency of the CBM assumed by Party A; and
- where $E_{(A-B)}$ is the degree of recognition by Party A of the efficiency of CBMs assumed by Party B.

The value of, for example, $E_{(B-A)}$ for a CBM_i depend on two main elements:

- the degree of importance (Qi) of CBM_i of Party A for Party B; and
- the degree of reliability ($Pi_{(B-A)}$) of CBM_i — Party B's conviction that CBM will be carried out by Party A.

We may write:

$$E_{i(B-A)} = Qi * Pi_{(B-A)}$$

Importance coefficient Qi is directly proportional to the damage that could be inflicted on Party B if Party A failed to perform its obligations under CBM_i . This coefficient can vary between 0 and 1.

The level of reliability $Pi_{(B-A)}$ of CBM_i is determined both by pre-existing conditions of interstate relations and by current information, received through various channels, on Party A's compliance with its obligations. This level may also range from 0 to 1. It is worth noting that the value depends on a country's "track record" as well as its current performance.

On the other hand, Party A's interest in complete implementation of a CBM is determined by its interests and by the current situation. Thus, as tensions between states increase, CBMs may be carried out less than thoroughly. Let us denote by $Pi_{(A)}$ the likelihood of implementation by Party A of CBM_i and let us call this value "the level of implementation" of CBM_i .

Parameters Q_i , $Pi_{(B-A)}$ and $Pi_{(A)}$ could be viewed as members of fuzzy sets, the media of which are sets of “important CBMs”, “reliable CBMs” and “realizable CBMs”. Then their values could be regarded as values of membership functions of parameters Q_i , $Pi_{(B-A)}$ and $Pi_{(A)}$ in appropriate sets. According to the rules of dealing with fuzzy sets:

$$Ei_{(B-A)} = \min (Q_i, Pi_{(B-A)}, Pi_{(A)})$$

As to factor $Ei_{(A-B)}$ the reasoning would be the same.

Examples

Let us consider two examples of CBMs as applied to missile defence: those agreed upon and signed in 1997 in a package on demarcation of strategic and non-strategic ABM systems “Agreement on Confidence Building Measures” and possible CBMs in connection with the development of the American national ABM system (known as National Missile Defense or NMD). CBMs could be introduced at different periods and carried out in different directions.

ABM systems fall into the category of complex organizational and technical systems. They have a certain life cycle, which includes development of a system, testing, the introduction of new systems, their deployment, operation in combat conditions and, finally, retirement.

In most cases the first stage — the period of an ABM system’s development — falls outside of the realm of CBMs, as it is difficult to limit basic and applied research in the field of ballistic missile defence, all the more so since their results could be used for peaceful purposes as well. At other stages, however, CBMs could be useful. At the testing stage, for example, implementing CBMs could be controlled and verified with the help of NTMs. So in this stage, CBMs can be clearly defined and are verifiable. CBMs are especially important and efficient at the stages of deployment and operation.

An ABM system could be broken down into several components — such as launchers, interceptor missiles and radars. The components are interconnected by information and control systems and have a certain set of characteristics: technical, structural, operational, etc. All of these components constitute the basis for working out the spheres in which various CBMs could be introduced and realized.

During the talks on demarcation of strategic and non-strategic ABM systems, Russia and the United States worked out an assortment of CBMs, which include: exchange of notifications of interceptor missiles launches and of testing ranges from which missiles could be fired; exchange of information concerning the forms, basing modes and numbers of non-strategic ABM systems basing; exchange of information on the concept of operating non-strategic ABM systems, interceptor missiles and non-strategic ABM radars specifications, thereby allowing evaluation of their flight and ballistic characteristics. Provisions are also made for (voluntary) operational demonstrations of non-strategic ABM systems and components, and the possibility of monitoring these tests by the opposite party. Additionally, the parties pledged to make annual unilateral statements on the absence of plans to develop non-strategic ABM systems with parameters surpassing the agreed values, and testing strategic ABM systems on MIRVed [multiple independently targetable re-entry vehicle] missiles.

Let us evaluate the efficiency for one of the parties (Russia, for example) of a CBM concerning non-strategic ABM systems — an exchange of information on the number of deployed interceptor missiles.

Let A be the American party and B the Russian party. The efficiency of the CBM would be related to the degree of significance of this American CBM for Russia. Incidentally, if the information on the scale of interceptor missiles deployment was not supplied, or was limited, it could cause certain damage to the defensive potential of the country.

$$E = E_{RF-USA}$$

The rate of importance (**Qi**) of the American CBM is very high for Russia, because the number of deployed interceptors of the non-strategic ABM systems may influence the implementation of the combat mission by Russian missile forces in certain regions. Additionally, while deploying the system of non-strategic ABMs, this importance can be identified and monitored in principle by NTMs, i.e. obtained from sources other than obligations in line with the CBMs. That means that the potential damage can be reduced. Therefore the importance degree value **Qi** of this CBM is estimated to be about 0.75–0.85.

The level of reliability Pi_{RF-USA} of the CBM in question could be equal to 1, because it would be irrational not to trust the United States in its desire to demonstrate the precise number of its deployed means in view of the high degree of Russia's monitoring capabilities. On the other hand, Russia is interested not only in the number of deployed interceptors, but in the number being produced at factories (so to say, interceptors in stocks), which does not fall under the CBM but at a moment of threat could be quickly deployed. That is why the experts assess the degree of reliability Pi_{RF-USA} as equal to not more than 0.8.

Let us consider this CBM from the American standpoint. It seems that the United States has no reason to limit the implementation of this CBM. At the same time, during especially tense periods, furnishing the noted information could appear sensible for American interests. That is why in the given example the implementation degree $Pi_{(USA)}$ can be assessed at not more than say 0.9.

Finally,

$$E_{RF-USA} = \min ((0.7-0.85), (0.8), (0.9)) = 0.75$$

Undoubtedly, the given assessment is highly subjective. At the same time it is an opportunity to demonstrate simplistically that the introduction of CBMs "de jure" does not mean that these measures will appear to be effective.

Let us turn to possible CBMs related to NMD now being developed in the United States. As previously mentioned, the United States sees the principal aim of such measures in proving the limited nature of the ABM system being developed and in encouraging confidence that the deployment of an American NMD would not decrease Russia's missile deterrence capability. However, the development and further deployment of an American NMD system (i.e. the subject of the agreement in respect of which CBMs are planned to be introduced) are expressly prohibited by the 1972 ABM Treaty. Yet the adoption of one or more CBMs in a context within the prohibition on NMD undoubtedly would be conducive to strengthening the principal provisions of the Treaty.

Among other measures it could be possible to consider those of sharing information on the number and location of interceptors, different notifications of activities pursued within the limits of the permitted activity (notifications of the tests and the test conditions, entering on active deployment, dismantlement of the components and separate elements of the ABM systems, etc.), on-site inspections of the interceptor production and location sites; and demonstrations, invitations to view the tests, etc.

However, the efficiency of the measures in proving the limited character of NMD is not high. This conclusion comes out of the fact that in the course of developing CBMs one can note a desire to avoid the heart of the problem (i.e. the subject of the CBMs). Russia's specific concern lies not so much in the limited character of the NMD system, as in the risk of the United States rapidly upgrading a limited NMD system to a level unacceptable to Russia. American scientific and political experts promote three principle arguments proving that the United States has no intention to improve the potential capabilities of the NMD system under development:

Russia's specific concern lies not so much in the limited character of the NMD system, as in the risk of the United States rapidly upgrading a limited NMD system to a level unacceptable to Russia.

- the American budget is transparent, and the upgrading of the NMD components would need considerable funding;
- the deployment of the NMD system in new regions will demand much time and will be under the surveillance of NTMs; and
- production of the new NMD systems and components would require the development of new production capabilities, which cannot be accomplished rapidly.

It is difficult to base effective and operable CBMs on the mentioned arguments. The importance coefficient (Q_i) of measures such as furnishing data on items in the budget, notification of tests, etc., is not very high because one can obtain such information from other sources.

The reliability value Pi_{RF-USA} is also far from high. Budget items might be concealed, the production capabilities of the new interceptors could be based on the existing plants (you cannot put a Russian observer at every American military factory). As for the deployment of the NMD system in new regions, NTMs will record only the fact of their deployment — which, in essence, would testify to the actual American denunciation of the ABM Treaty.

Lastly, the United States has not even decided what kind of NMD system the country needs. Already there are considerations about the multistage method of its creation and possibilities for future upgrade. In such circumstances you cannot exclude a possibility that Russia will face a situation of only partial observance of CBMs by the United States (the implementation rate $Pi_{(USA)}$ is less than 1), which will undoubtedly decrease the efficiency of the CBM. Thus, there is no sense in attempting to turn the “banning” ABM Treaty of 1972 into an “permissive” one and forcing Russia to agree with the revision of its provisions.

Conclusion

In relation to the question of anti-missile defences, CBMs could be introduced when the sides can but do not want to come to an agreement on the subject of the negotiations, or when they want to but cannot come to an agreement. Such measures are aimed at improving the transparency and predictability of other states' conduct in the areas covered by CBM regimes. These CBMs could embrace practically every stage of an ABM system's lifecycle. To determine the directions and zones of coverage where CBMs could be introduced, it is reasonable to break down the ABM system into its basic components.

The efficiency of CBMs is a variable of a fuzzy value, and it is determined by the degree of importance attached to it by each party, as well as the levels of reliability and feasibility. However, the juridical codification of CBMs does not mean that these measures will automatically be effective.

The attempt to introduce CBMs to substantiate the possibility of adaptation of the ABM Treaty to new realities will be a patent failure. Yet the introduction of CBMs that keep the basic provisions of the ABM Treaty of 1972 unchanged would contribute to its enhancement.

NMD resource list

Compiled by Derek Brown

The Acronym Institute

www.acronym.org.uk

Conducts research and publishes information on negotiations and verification of arms control, disarmament and related treaties and agreements. Follows closely NMD developments and their implications for existing treaties and arms control. The Institute publishes *Disarmament Diplomacy* (available online).

Arms Control Association

www.armscontrol.org/assorted/nmdindex.htm

Provides links to *Arms Control Today* articles on NMD as well as fact sheets.

Ballistic Missile Defense Organization

www.acq.osd.mil/bmdo/bmdolink/html

The United States Department of Defense's Ballistic Missile Defense Organization is responsible for managing, directing and executing the BMD programme in the United States. Elements concerning the American missile defence programme can be found, including background, fact sheets, technical discussions and budget.

The Bulletin of Atomic Scientists

www.bullatomsci.org

Online edition of the journal, reporting on global security, military affairs and nuclear issues. The database can be searched by keyword.

Center for Defense Information

www.cdi.org

CDI is a non-governmental research organization dedicated to monitoring the United States military. The site contains commentary, fact sheets, treaties and laws, and a comprehensive list of outside links.

Centre for Defence and International Security Studies

www.cdiss.org/hometemp.htm

The United Kingdom-based CDISS is a research institute dedicated to raising awareness and debate on a number of defence and security issues throughout the world. Site includes information on missile defence contexts, technologies, counterforce and links.

Coalition to Reduce Nuclear Dangers

www.clw.org/coalition/libbmd.htm

Provides useful links to congressional statements, hearings and legislation, governmental statements, non-governmental statements, and popular press editorials concerning missile defence. Take the missile defence shortcut to find their resources.

Council for a Livable World

www.clw.org/bmd.html

This comprehensive site contains background information, links to government reports and legislation, and issue briefs, all pertaining to missile defence.

Federation of American Scientists

www.fas.org/spp/starwars/program/nmd/index.html

This site takes an in-depth look at the National Missile Defense programme, including technical specifications, commentary, up-to-date news, and related treaties.

The Henry L. Stimson Center

www.stimson.org

This site contains links to resources on missile defence issues, including briefs, conference reports, roundtable summaries and threat assessments.

Heritage Foundation

www.nationalsecurity.org

A conservative think-tank that provides information and policy analyses on the national security interests of the United States offers information in favour of a strong American NMD programme.

Union of Concerned Scientists

www.ucsusa.org

This site provides an in-depth look at the NMD programme of the United States. Briefings, fact sheets, analysis and links on national missile defence.

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Visiting Fellowship Programme

To better address issues of regional security and to help promote regional co-operation and development of indigenous research capacity, UNIDIR's Visiting Fellowship Programme hosts four researchers from a single region to work together at UNIDIR for four to six months per year. Researchers are chosen from different countries that form the region of study. The focus of their research is a particularly difficult aspect of regional security and it is hoped that the resulting research paper will feed into policy debates on the security of their region.

In November, UNIDIR welcomed the current Visiting Fellows from South Asia. They are Shiva Hari Dahal (Nepal, specialist in human rights), Haris Gazdar (Pakistan, political economy), Soosaipillai Keethaponcalan (Sri Lanka, ethnic relations and conflict resolution) and G. Padmaja (India, military and state security). The four fellows will be working together until April on a co-operative research project and jointly producing a monograph.

The fellowships are allocated on a competitive basis, taking due care to obtain regional representation. The exact details of the research topic are collectively decided between UNIDIR and the four fellows. The current Fellowship Programme focuses on South Asia. In subsequent years, fellows will be attracted from other regions, such as West Africa, Latin America, the Middle East, North East Asia, Southern Africa, Central Europe, East Africa and so on.

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Tactical Nuclear Weapons

UNIDIR, in cooperation with the Monterey Institute of International Studies and Peace Research Institute Frankfurt, has launched a research project on the urgent issue of tactical nuclear weapons (TNWs). The project addresses such topics as the definition of TNWs, numbers, the roles of TNWs in various military and political doctrines, and future measures to address the TNW problem. The project will be carried out over a period of nine months at UNIDIR. The Institute has commissioned papers from experts and has coordinated the research and a research meeting. The preliminary findings of the study were circulated at the May NPT Review Conference. The project will result in the publication of a Research Report in the UNIDIR series and a "UNIDIR Brief" setting out the main findings of the study in succinct form for broad distribution. A number of other publications related to TNWs are in production, to be published in the near future.

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Participatory Approaches to Evaluating the Implementation of Humanitarian Landmine Action

Supported by the Ted Turner Foundation

Evaluating mine action programmes in terms of cost-effectiveness and efficiency has its merits in a donor community concerned with value for money in project implementation. But humanitarian mine action is by definition a qualitative process. It is designed to enhance human security, provide victim assistance and encourage ownership of mine action programmes in affected communities and regions. Traditional evaluation and monitoring techniques do not readily lend themselves to assessments of such qualitative goals and objectives. Participatory monitoring and evaluation techniques (PM&E) are more appropriate to this task. PM&E involves key stakeholders in identifying their needs and assessing the most appropriate options for meeting those needs. Experience has shown that participatory approaches improve the quality, effectiveness and sustainability of donor programmes' actions and outcomes. By placing people at the centre of the monitoring and evaluation process, mine action efforts are guaranteed to empower local communities and encourage local ownership. The proposed pilot study is not only designed to pioneer PM&E approaches within the landmine community, but also to provide a unique opportunity for UNIDIR to help innovate bottom-up approaches to arms control implementation.

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The Costs of Disarmament

In order to present the cost-benefit analysis of disarmament, UNIDIR proposes to take key countries as examples and carefully research what their commitments to disarmament treaties means to them in terms of financial and resource costs. In addition, the project will try to ascertain what each country perceives are the benefits brought to them through their participation in the agreements and whether there is consensus that there is a net gain to the state in question. The aim of the project is to achieve a better understanding of the costs and benefits of disarmament agreements with a view to assisting policy-makers decide how money is spent on such commitments, which budget lines are best structured to handle such spending and how states could approach this aspect of negotiations in the future.

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Peace-building and Practical Disarmament in West Africa

UNIDIR is currently running a project on peace-building and practical disarmament in West Africa. The project is undertaken within the framework of the West African Moratorium on Importation, Exportation and Manufacture of Light Weapons, signed on 31 October 1998 in Abuja (Nigeria). The project aims at strengthening the necessary participation of West African civil societies in the implementation of the moratorium. The broad objective is to build grass-root capacities through research on peace and security issues and to empower ordinary citizens in such a way that civil society organizations become determinant constituencies for disarmament and arms control.

After several tours of the region by the Project Manager, a first collection of papers by selected authors from Sierra Leone has been published. A second set of papers focusing on Liberia has been commissioned.

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UNIDIR Handbook on Arms Control

UNIDIR is producing a handbook that will explain the major concepts and terms relating to arms control. The handbook will be used as both a primer for an audience with limited familiarity with arms control and as a reference for students, scholars, diplomats and journalists who are more experienced in arms control matters.

The handbook will be organized as a thematically structured glossary of approximately 400 terms relating to arms control. Each term is situated within its wider context so that, on the one hand, a specific term can be looked up quickly, and on the other hand, an entire issue can be covered. Cross-references to other terms and concepts will point the reader to relevant related issues. The researcher designing and drafting the handbook will be assisted by an editorial committee consisting of regional and arms control experts.

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Fissile Materials

In April 1999, UNIDIR published *Fissile Material Stocks: Characteristics, Measures and Policy Options* by William Walker and Frans Berkhout. The publication is intended to support the Conference on Disarmament in its thinking on the range of options available to deal with stocks of fissile material. Additionally, UNIDIR has commissioned a report on fissile material inventories to provide an up-to-

date account of fissile materials, assess national policies related to the production, disposition and verification of fissile materials, and identify facilities and locations which might be subject to safeguards under a treaty.

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UNIDIR Disarmament Seminars

UNIDIR occasionally holds small, informal meetings on various topics related to disarmament, security and non-proliferation. These off-the-record gatherings allow members of the disarmament community, missions and NGOs to have an opportunity to discuss a specific topic with an expert. Recent topics covered include fissile materials, the prevention of war, peace-building in West Africa, reducing nuclear dangers, and biological and chemical weapons programmes. Speakers at recent meetings have included William Walker, Ambassador Jonathan Dean, Michael Krepon and Peter Batchelor.

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Geneva Forum

Together with the Programme for Strategic and International Security Studies of the Graduate Institute of International Studies and the Quaker United Nations Office, UNIDIR organizes an ongoing discussion series called Geneva Forum. Invited speakers deal with specific thematic and/or regional issue. The series targets the local missions and organizations in an effort to disseminate information on a range of security and disarmament topics. The series seeks to act as a bridge between the international research community and Geneva-based diplomats and journalists.

Now in its third year, the Geneva Forum is being expanded to increase the degree of networking among the academic, NGO and diplomatic communities in Geneva. The enhanced Geneva Forum

will bring together the three main sectors in Geneva — disarmament, human rights and humanitarian action — to discuss mutual interest in security and disarmament issues and to further expand the thinking in these communities. This collaborative initiative is being funded by the Ford Foundation and it began on 1 October.

The focus of the Geneva Forum in 1998 and 1999 was the issue of small arms and light weapons. Recently, the first volume of collected Geneva Forum papers has been published (see the publications section).

If you would like more information about Geneva Forum, please contact:

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DATARIs

In cooperation with SIPRI (Stockholm International Peace Research Institute), UNIDIR has developed an online database of disarmament, arms control, security and peace research institutes and projects around the world. The database can be accessed through UNIDIR's website and institutes can update their information via a password.

If you would like for your institute to be included in DATARIs, please contact:

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PUBLICATIONS

Bound to Cooperate: Conflict, Peace and People in Sierra Leone

The chapters of this book wrestle with fundamental questions of practical disarmament and peace-building in Sierra Leone. Although they were written prior to the May-June 2000 upsurge of violence in Freetown that led to the arrest of Foday Sankoh, these incidents underline the relevance of the authors' analyses.

What links this series of research papers is the fact that all the authors are actors: they are Sierra Leonean civic leaders who are working for sustainable peace in their country. Each author is involved at one level or another in the search for a permanent peaceful resolution to the civil war, and a solution to the destabilizing influence of small arms and light weapons. In enabling these writers to get their views across, we hope to encourage a much-needed debate on security and security-sector reform in West Africa. We hope to enrich the understanding of Sierra Leone's partners and donors. In the long run, we believe that this partnership approach will shore up the peace builders, and contribute to sustainable peace across the whole region.

This is the first in a series of books designed to feed into the debate on sustainable peace, security and development in West Africa. The next book in the series will present a collection of papers from civil society actors in Liberia. Depending on funding, we will publish similar studies by civil society in other ECOWAS countries.

Background to the Conflict (1961–1991): What Went Wrong and Why?—*Joe A.D. Alie*

The Long Road to Peace: 1991–1997—*Abubakar Kargbo*

Bound to Cooperate: Peacemaking and Power-sharing in Sierra Leone—*Chris Squire*

Arms Smuggling in Post-War Sierra Leone—*Nat J.O. Cole*

Arms Regulation—*J.P. Chris Charley*

Arms Control Policy Under Threat: Dealing with the Plague of Corruption—*Abdulai Bayraytay*

Peace by Other Means: The Missing Link in DDR Programmes—*Michael Foray*

Disarmament, Demobilization and Reintegration in Post-War Sierra Leone—*Francis Kai-Kai*

Community-Based Disarmament and Post-Conflict Peace-building—*Isaac Lappia*

Women Against Weapons: A Leading Role for Women in Disarmament—*Binta Mansaray*

A Price for Peace? Justice and Reconciliation in Post-War Sierra Leone—*Joe A.D. Alie*

Anatole Ayissi and Robin-Edward Poulton

Editors

Sales number GVE.00.0.20

Tactical Nuclear Weapons: Options for Control

At the end of the Cold War, it was well understood that tactical nuclear weapons, which were forward-based and integrated with conventional forces, were a particularly dangerous category of nuclear weapons. A great deal of uncertainty remains today over the implementation of the 1991 unilateral declarations.

Since 1999, the spectre of tactical nuclear weapons has again been raised as a serious concern. The culminated response by Russia to NATO enlargement, the conflict over Kosovo, and United States proposals to modify the Anti-Ballistic Missile Treaty, thus allowing national missile defences, has led to renewed interest in tactical nuclear weapons in Russia and to calls to remanufacture or modernize the existing tactical nuclear force within the near future. In addition, regional nuclear weapons developments, particularly in South Asia following the nuclear weapons tests by India and Pakistan in 1998, have fostered concerns over the deployment of tactical nuclear weapons in Asia and the Middle East.

It is clear, particularly when considering the possession of nuclear weapons by States other than the *de jure* nuclear weapon states, that the definitions of tactical nuclear weapons are inadequate. If strategic nuclear weapons are defined in terms of the capability and mission to hit the heart of an adversary's homeland, then the range of these weapons is not always the key factor in their definition, neither is the explosive yield. In the United States-Russia dialogue on such weapons however, geographical range has been the overriding feature in attempts to delineate tactical from strategic. A number of critics argue that the subdivision of nuclear weapons into strategic and tactical is not as useful as treating all nuclear weapons collectively. Others feel strongly that the particular dangers of tactical nuclear weapons, with regard to their missions, command and control, are sufficient to warrant their separate and urgent treatment.

There is also the debate about the role of tactical nuclear weapons beyond the national boundaries of the possessor states, focusing much attention on tactical nuclear weapons in NATO Europe and on NATO doctrine. The large numerical superiority of Russian deployed tactical nuclear weapons and recent changes in Russian nuclear weapons doctrine was cause for increasing concern. A number of approaches to dealing with the tactical nuclear weapons issue are outlined in this book. It is hoped that these proposals will add value to the discussions and debates.

Harald Müller is Executive Director at the Peace Research Institute Frankfurt, Germany, where Annette Schaper is a Senior Associate in the Arms Control and Disarmament Group. William C. Potter is the Director of the Center for Nonproliferation Studies and the Center for Russian and Eurasian Studies at the Monterey Institute of International Studies, United States. Nikolai Sokov is also at the Center for Nonproliferation Studies.

Harald Müller, Annette Schaper, William C. Potter and Nikolai Sokov

Sales number GV.E.00.0.21

Tactical Nuclear Weapons: A Perspective from Ukraine

After a decade in the background, the question of tactical nuclear weapons (TNWs) in Europe has begun to raise concern among politicians and the public. Although the problems of today are not as dramatic as those of the Cold War, when the threat of TNW use was ever present, TNW remain a cause for concern and must be addressed. The approaches used during the Cold War are no longer effective and new ones have not yet been devised.

This study is concerned with the present and future role of TNW in the new European security system as seen from Ukraine, a country which once had the world's third largest nuclear arsenal stationed on its territory.

The study is the work of a team of researchers at the Dnipropetrovsk Branch of the National Institute for Strategic Studies led by Professor A. Shevtsov. A. Shevtsov writes on the problems that faced Ukraine in choosing the non-nuclear alternative. A. Gavrish contributes the analysis of the situation with regard to the tactical nuclear weapons possessed by NATO countries. A. Chumakov provides the corresponding analysis of the Russian arsenal. A. Yizhak presents the prospects for nuclear disarmament.

Tactical Nuclear Weapons in Europe: History of Deployment

Renunciation of Nuclear Weapons: The History of Ukraine

Tactical Nuclear Weapons in the New European Security System: To Be or Not To Be?

Prospects for Reducing the Role of Tactical Nuclear Weapons in Europe

A. Shevtsov, A. Yizhak, A. Gavrish and A. Chumakov

The Geneva Forum: Seminars on Small Arms, Vol. 1

Since 1997, the Quaker United Nations Office, the Programme for Strategic and International Security Studies of the Graduate Institute of International Studies, and the United Nations Institute for Disarmament Research have collaborated in bringing expert presentations on issues in contemporary arms control and disarmament to the international community in Geneva. These presentations have been addressed to the members of the diplomatic missions in Geneva, and our goal has been to offer high-quality analytical perspectives on contemporary issues in a “user friendly” format related to the policy development needs and possibilities of this particular community.

The focus of the Geneva Forum in 1998 and 1999 was the issue of small arms and light weapons. In this small volume, the reader will find the summary results of the seminars that were held between May 1998 and November 1999. We hope, through this volume, to reinforce the experts’ presentations by making them available to a wider audience.

Introduction

Conventional Arms Transfers: Surplus Weapons and Small Arms — *Herbert Wulf*

Illegal Arms in Albania and European Security — *Chris Smith*

Weapons: A Question of Health? — *Robin M. Coupland & David Meddings*

The International Commission of Inquiry (Rwanda) — *Eric Berman*

The United Nations and Small Arms: The Role of the Group of Governmental Experts —
Ambassador Mitsuro Donowaki, Ms Graciela Uribe de Lozano & Ambassador André Mernier

Monitoring the Flow, Availability and Misuse of Light Weapons: A New Tool for the Early Warning of Violent Conflict — *Dr. Edward J. Laurance*

The Norwegian Initiative on Small Arms Transfers: West Africa and Beyond — *Mr. Ole-Petter Sunde*

War, Peace and Light Weapons in Colombia: A Case Study — *Mr. Daniel García-Peña Jaramillo*

Quaker United Nations Office, the Programme for Strategic and International Security Studies of the Graduate Institute of International Studies and the United Nations Institute for Disarmament Research

Editors

Peacekeeping in Africa: Capabilities and Culpabilities

African regional and subregional organizations have an important role to play in the promotion of peace and security on their continent. The United Nations Security Council has relied on them excessively, however, in large part because it has been reluctant to authorize United Nations peacekeeping operations. Although there is merit to strengthening indigenous capabilities, the issue of whether Africans are prepared for the challenge of assuming primary responsibility for responding to conflicts is another matter. What can African states and organizations do to enhance their peacekeeping capabilities? How can the international community better tailor its initiatives to the needs of African actors? This book answers such questions.

Part I of this book describes challenges to African peace and security and discusses the reasons why the United Nations Security Council has changed its peacekeeping policy. Part II examines African attempts to manage and resolve conflicts on their continent. Part III reviews African peacekeeping experience outside of African regional, subregional and ad hoc initiatives. Part IV describes and analyses efforts made by non-African states to address the deficit. The study concludes with a series of recommendations on how to make current approaches more effective. It provides concrete suggestions for strengthening African regional and subregional efforts and for improving Western capacity-building programmes. It also emphasizes that the United Nations must assume a greater role in both promoting and undertaking peacekeeping on the African continent.

Preface by the Secretary-General

PART I Setting the Stage

PART II African Organizations and Ad Hoc Initiatives

PART III Understanding African Peacekeeping Abilities and Limitations

PART IV Efforts to Develop African Capacities

Conclusion

Annexes and Selected Bibliography

Eric Berman and Katie Sams

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The Small Arms Problem in Central Asia: Features and Implications

Although Central Asia has been seriously afflicted by the proliferation, accumulation and misuse of small arms, the region has been largely ignored by the international community. This report attempts to highlight the gravity of the situation in the region by describing the ways in which the small arms problem manifests itself within the Central Asian context. The study specifically focuses on the following issues: the factors generating demand for small arms; the external and internal sources of small arms; the routes through which arms and ammunition are transferred; the various types of small arms in circulation; the humanitarian, political and societal implications of small arms; and finally, the factors hampering the efforts to combat the small arms problem. The study concludes with remarks on the impact of small arms in Central Asia and on possible approaches for their control.

Afghanistan: Two Decades of Armed Conflict

The Cold War Legacy

Small Arms and the Taliban Ascendancy

The Human Costs of Small Arms

The Conflict in Tajikistan

The Civil War 1992–1997

The Sources of Small Arms

The Fragile Peace

Uzbekistan, Kyrgyzstan, Kazakhstan and Turkmenistan: Small Arms and Latent Threats to Stability

Weaponized Societies

Potential Sources of Armed Internal Conflict

Bobi Pirseyedi

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West Africa Small Arms Moratorium: High-Level Consultations on the Modalities for the Implementation of PCASED

*A report of the Experts' Meeting and the Civil Society Meeting
23–24 March 1999, Bamako, Mali*

Recognizing the threats to national security posed by the proliferation of small arms and light weapons, West African States have sought to address the issue through a subregional grouping, the Economic Community of West African States (ECOWAS). Inspired by the “security first” approach, on 31 October 1998, in Abuja, all sixteen ECOWAS member states signed the *Declaration of a moratorium on the importation, exportation and manufacture of light weapons in West Africa*.

The Moratorium — commonly known as the West African Small Arms Moratorium — entered into force on 1 November 1998, for a renewable period of three years. This Moratorium is an innovative approach to peace-building and conflict prevention. It is not a legally binding regime but rather an expression of shared political will. In order for the Moratorium regime to be effective, concrete measures need to be adopted to ensure that West African governments remember this political commitment and to mobilize national, regional and international support for its implementation. Located in Bamako, the Programme for Coordination and Assistance for Security and Development (PCASED) is the designated implementation mechanism for the Moratorium.

On 23 and 24 March 1999, ECOWAS, the UN Development Programme and the UN Regional Centre for Peace and Disarmament in Africa hosted high-level consultations with West African and small arms experts to elaborate the modalities for the implementation of PCASED. This report outlines the various discussions that took place within both the Experts' Meeting and the Civil Society Meeting about these priority areas.

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Small Arms Control: Old Weapons, New Issues

The twenty-nine papers collected in this volume were originally prepared for four regional workshops organized by the United Nations Department for Disarmament Affairs to inform the work of the United Nations Panel of Governmental Experts on Small Arms. These workshops were held during 1995–96. Most of the papers were updated in 1998. Authors include academic, military, governmental and activist experts.

The editorial committee consisted of: Jayantha Dhanapala, Under-Secretary-General for Disarmament Affairs, United Nations; Mitsuro Donowaki, Ambassador and Special Assistant to the Minister for Foreign Affairs of Japan; Swadesh Rana, Chief, Conventional Arms Branch, Department for Disarmament Affairs, United Nations; and Lora Lumpe, Senior Researcher for the Norwegian Initiative on Small Arms Transfers (NISAT) at the International Peace Research Institute, Oslo (PRIO).

The publication is divided into four parts:

Causal Factors and Policy Considerations

The Problem of Small Arms and Light Weapons in Africa

The Proliferation of Small Arms and Light Weapons in Latin America and the Caribbean

The Plague of Small Arms and Light Weaponry in South Asia

Jayantha Dhanapala, Mitsuro Donowaki, Swadesh Rana and Lora Lumpe

Editors

UNIDIR/Ashgate publication
ISBN 0 7546 2076 X

Fissile Material Stocks: Characteristics, Measures and Policy Options

In 1998, on the basis of the Shannon Mandate, the Conference on Disarmament (CD) established an ad hoc committee for negotiating a fissile materials treaty. The treaty is intended to achieve a ban on the production of fissile materials for military purposes in a non-discriminatory, multilateral and internationally verifiably manner. Stocks of fissile materials have accrued transnationally due to armament and disarmament processes, as well as to civil uses of nuclear power. However, very little is known in the public domain about the nature, size and whereabouts of such stocks, and the complexities surrounding their regulation and control. UNIDIR's report on fissile material stocks seeks to begin to redress this problem by providing factual background information on all of these important matters. The report categorizes and quantifies fissile material stocks, and examines the measures which have heretofore been developed regarding their control and management. The report also includes an overview of broad policy options available to states in addressing the stocks issue, which could prove valuable in informing negotiations in the CD.

Fissile material stocks: function, scale and distribution

Characterization by type of inventory

The scale, type and location of fissile material stocks

Measures relating to fissile material stocks: recent developments

Military inventories: continuing absence of international regulation

Transitional inventories: towards regulation and disposition

Civil inventories: the extension of transparency

Policy strategies and options

Stocks and the FMT: possible diplomatic approaches

Possible measures for reducing risks posed by fissile material stocks

Fissile materials and their production processes

International safeguards and physical protection

William Walker and Frans Berkhout

Sales no. G.V.E.99.0.15
ISBN 92-9045-131-9

Sensors for Peace

United Nations peace operations have a tradition of several decades, and their scope and importance has increased markedly since the end of the Cold War. Peacekeeping operations, both of the traditional and the extended type, comprise monitoring tasks as a central part of their mandates. Agreements or resolutions, whether they demand withdrawal behind a cease-fire line, keeping a buffer zone demilitarized, or banning heavy weapons in control zones or safe havens, require that compliance is checked reliably and impartially. The more comprehensive the monitoring, the more likely the compliance. In practice, however, monitoring duties often require the surveillance of such large areas that United Nations peacekeeping units cannot provide continuous coverage. Thus, peacekeeping personnel are permanently deployed only at control points on the roads or areas deemed most sensitive. Minor roads and open terrain are covered by spot-check patrols. This creates many opportunities for infractions and violations.

Unattended ground sensor systems allow all this to change. Unattended ground sensors are suited to permanent, continuous monitoring. They can be deployed at important points or along sections of a control line, sense movement or the presence of vehicles, persons, weapons, etc. in their vicinity and signal an alarm. This alerts peacekeepers in a monitoring centre or command post, who can send a rapid-reaction patrol immediately to the site to confront the intruders, try to stop them, or at least document the infraction unequivocally.

Unattended ground sensor systems generally have not been used in peace operations. Thus, the wider introduction of unattended ground sensor systems in future United Nations peace operations requires fresh study from operational, practitioner, system design and legal perspectives. *Sensors for Peace* is an excellent first look at this timely issue.

Introduction — *Jürgen Altmann, Horst Fisher & Henny J. van der Graaf*

The Use of Unattended Ground Sensors in Peace Operations — *Henny J. van der Graaf*

Questionnaire Answers Analysis — *Willem A. Huijssoon*

Technical Potentials, Status and Costs of Ground Sensor Systems — *Reinhard Blumrich*

Maintaining Consent: The Legality of Ground Sensors in Peace Operations — *Ralph Czarnecki*

Conclusions and Recommendations — *Jürgen Altmann, Horst Fisher & Henny J. van der Graaf*

Jürgen Altmann, Horst Fischer and Henny J. van der Graaf

Editors

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Non-Offensive Defence in the Middle East?

Non-offensive defence (NOD) emerged as a proposed remedy to the military security problems of East and West during the latter part of the Cold War. Grounded in the notion of “cooperative security”, NOD is premised on the postulate that states in the international system are better off pursuing military policies which take account of each other’s legitimate security interests than they are in trying to gain security at each others’ expense. Competitive military policies which seek to achieve national security through a build-up of national military means, may well be counter-productive and leave states more insecure. Seeking to procure national military security through a build-up of national armaments raises suspicions as to the purpose of these armaments, which in turn trigger countervailing armament efforts which ultimately lower the level of security for all. By making the defence of domestic territory the sole and clear objective of national military policies, NOD aims to strike a balance between the imperatives of ensuring adequate national military security and of avoiding provocation.

NOD aims towards national military defences strong enough to ensure adequate national military security, but not strong enough to be seen as threatening by others. The provision of adequate yet non-threatening military defence can be highly useful in a region such as the Middle East where political and military confrontations are inextricably linked, and where political settlement in the absence of military security is inconceivable. In the Middle East, NOD could reduce prevailing military tensions and open the way for broader political arrangements on the future of the region.

The introduction of NOD in the Middle East would not require that all Middle Eastern states adopt the same NOD model. Rather, each Middle Eastern state can select the particular NOD model most suitable to its requirements.

Non-Offensive Defence in the Middle East — *Bjørn Møller*

Non-Offensive Defence in the Middle East: Necessity versus Feasibility — *Ioannis A. Stivachtis*

Cooperative Security and Non-Offensive Defence in the Middle East — *Gustav Däniker*

Non-Offensive Defence and its Applicability to the Middle East: An Israeli Perspective —
Shmuel Limone

Bjørn Møller, Gustav Däniker, Shmuel Limone and Ioannis A. Stivachtis

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A Peace of Timbuktu: Democratic Governance, Development and African Peacemaking

Mali is admired for two recent accomplishments. The first is the country's transition to democracy, which took place in 1991–1992. This effort included the overthrow of Moussa Traoré's twenty-three year military dictatorship on 26 March 1991 — a process of military and civilian collaboration which fostered national reconciliation, a referendum for a new constitution, and elections which brought to power Mali's first democratically elected president, government and legislature. The second achievement is the peacemaking between the Government of Mali and the rebel movements in the northern part of the country: this process successfully prevented the outbreak of civil war and presents useful lessons in preventive diplomacy for the international community. The peacemaking culminated in a ceremony known as the Flame of Peace, when rebel weapons were incinerated in Timbuktu on 27 March 1996. This study of the events surrounding the uprisings in the North of Mali and the measures which restored peace (and those which will maintain it) is the result of a collaboration between the United Nations Development Programme and the United Nations Institute for Disarmament Research.

This peace process was remarkable for the way in which the United Nations agencies were able to help, discreetly dropping oil into the machinery of peacemaking. For a cost of less than \$1 million, the United Nations helped the Malians to avoid a war, and lit the Flame of Peace. With less than \$10 million, the United Nations became the leading partner of Mali's Government and civil society, in peace-building, disarming the ex-combatants and integrating 11,000 of them into public service and into the socio-economy of the North through a United Nations Trust Fund. The experience shows that not only is peacemaking better than peace-keeping, but that it is much cheaper.

A Peace of Timbuktu includes in-depth coverage of the following topics:

- Mali's History and Natural Environment
- The Build-up to the Crisis in Northern Mali
- The Armed Revolt 1990–1997
- Peacemaking and the Process of Disarmament
- The International Community as a Catalyst for Peace
- Ensuring Continued Peace and Development in Mali
- The Flame of Peace Burns New Paths for the United Nations

United Nations Secretary-General Kofi Annan has written the preface. The book includes maps, texts of relevant documents and laws, and a bibliography, as well as photographs by the authors and peace drawings by the children of Mali.

Robin Edward Poulton and Ibrahim ag Youssouf

Sales No. G.V.E.98.0.3

ISBN 92-9045-125-4

Updated second edition available in French

G.V.F.98.0.3

The Implications of South Asia's Nuclear Tests for Non-proliferation and Disarmament Regimes

On 7 and 8 September 1998, UNIDIR held a private, off-the-record meeting on *The Implications of South Asia's Nuclear Tests for the Non-proliferation and Disarmament Regimes*. This "track one and a half" meeting was designed to address the needs of policy-makers — governmental and non-governmental agents — in their assessment of the impact of the nuclear-weapons tests carried out by India and Pakistan in May 1998. The governments of Australia, Denmark, Italy, Norway, New Zealand and the United States generously sponsored the meeting.

More than fifty people from over twenty-five countries attended the conference. Each participant attended in his or her personal capacity as an expert and not as a representative of a country or a NGO. At the end of this two-day meeting, there was general agreement among participants that neither India nor Pakistan had enhanced its own security or international status by conducting the tests, but that the risk of nuclear war in the region is now greater. Also, it was recognized that the NPT and the CTBT had been in difficulty prior to the tests, although they remained the best solutions available to reduce potential for further conflict and therefore remained crucial. Finally, many participants expressed their concern that if India and Pakistan were rewarded in any way for demonstrating their nuclear capabilities, this may cause some NPT members to reassess their membership in the regime.

International response to the nuclear tests in South Asia was inadequate: there is a need for more coherent and collective action. Participants focused on practical suggestions to policy-makers to reduce the risk of war; to save the non-proliferation and nuclear arms control regimes; and to anticipate the effects of the tests on areas of regional tensions, particularly the Middle East.

The Responses to the Tests

Causes of the Tests

Consequences of the Tests

Regional Security

Consequences for Non-Proliferation and Disarmament

Damage Limitation

Developing the Non-Proliferation and Disarmament Agenda

Conclusions and Policy Options

Main Summary

Prevention of Nuclear War

Saving the Non-Proliferation and Arms Control Regimes

The Effects on Regional Tensions, Especially in the Middle East

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Additional UNIDIR publications

Building Confidence in Outer Space Activities, Péricles Gasparini Alves, ed., 1996, Sales No. GV.E.96.0.20

Curbing Illicit Trafficking in Small Arms and Sensitive Technologies: An Action-Oriented Agenda, Péricles Gasparini Alves and Daiana Belinda Cipollone, eds., 1998, Sales No. GV.E.98.0.8, also available in Spanish, GV.S.98.0.8

Evolving Trends in the Dual Use of Satellites, Péricles Gasparini Alves, ed., 1996, Sales No. GV.E.96.0.20, ISBN 92-9045-115-7

The Fissile Material Cut-Off Debate: A Bibliographical Survey, Daiana Cipollone, 1996, Sales No. GV.E.96.0.30.

Increasing Access to Information Technology for International Security, Péricles Gasparini Alves, ed., 1997, Sales No. GV.E.97.0.23

National Threat Perceptions in the Middle East, by James Leonard, Shmuel Limone, Abdel Monem Said Aly, Yezid Sayigh, the Center for Strategic Studies (University of Jordan), Abdulhay Sayed and Saleh Al-Mani, 1995, Sales No. GV.E.95.0.24.

Nuclear-Weapon-Free Zones in the 21st Century, Péricles Gasparini Alves and Daiana Belinda Cipollone, eds., 1997, Sales No. GV.E.97.0.29, also available in Spanish, Sales No. GV.S.97.0.29

The Transfer of Sensitive Technologies and the Future of Control Regimes, Péricles Gasparini Alves and Kerstin Hoffman, eds., 1997, Sales No. GV.E.97.0.10

Verification of a Comprehensive Test Ban Treaty from Space — A Preliminary Study, Bhupendra Jasani, 1994, Sales No. GV.E.94.0.30.

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