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The US National Missile Defense Program: Vital Shield or Modern-Day Maginot Line?

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Modern-Day Maginot Line?

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Abbreviations and Acronyms

ABM	Anti-Ballistic Missile
ASEAN	Association of South East Asian Nations
BMD	Ballistic Missile Defense (US)
CIA	Central Intelligence Agency (US)
DPRK	Democratic Peoples' Republic of Korea (North Korea)
DSP	Defense Support Program (US)
FOBS	Fractional Orbital Bombardment System
GBI(s)	Ground Based Interceptor(s)
GPALS	Global Protection Against Limited Strikes
ICBM	Inter-Continental Ballistic Missile
INF	Intermediate Range Nuclear Forces
MAD	Mutual Assured Destruction (or Deterrence)
MTCR	Missile Technology Control Regime
NIE	National Intelligence Estimate (US)
NMD	National Missile Defense (US)
NPT	Nuclear Non Proliferation Treaty
RV(s)	Re-entry Vehicle(s)
SBIRS	Space-Based Infra-Red System
SDI	Strategic Defense Initiative (US—also 'star wars')
START	Strategic Arms Reduction Talks
TMD	Theater Missile Defense (US)
WMD	Weapon(s) of Mass Destruction (nuclear, biological, chemical)

Major Issues

One of the first decisions to confront the incoming President of the United States, once the disputed election is resolved, will be what to do about the National Missile Defense (NMD) project. In September 2000, President Clinton deferred a decision on deployment, citing doubts as to overall reliability of the system as presently proposed. Should the US eventually proceed to deployment, it is likely that it will seek support, both political and practical, from Australia.

National Missile Defense is an effort to develop a system to protect the United States from attack by missile-delivered weapons of mass destruction (WMD)—nuclear, biological or chemical. It is basically a dramatically scaled-down version of the Strategic Defense Initiative (SDI or 'star wars') announced by the Reagan Administration in 1983.

The scaling-down relates only to the program objectives; the budget continues to be very substantial. Objectives, however, have shrunk from defending the US against attack by thousands of missiles in a massive nuclear exchange to defence against no more than 20 to 25 missiles, probably from a so-called 'rogue' state—recently redubbed 'states of concern'—or, less probably, from an accidental or unauthorised launch by one of the established nuclear powers.

NMD raises a number of challenging issues.

Technologically, the program remains problematical. Testing is still at a relatively early stage and some components have yet to be tested at all. Nevertheless the US is approaching a decision on deployment. Even some supporters of NMD warn that a deployment decision will not of itself produce a functional NMD system. Given that a single failure might result in the destruction of an American city, NMD faces a technological requirement for almost perfect performance in the field. This is the measure of the technological challenge.

A principal argument levelled against NMD is that it will undermine strategic arms stability, by threatening the long-established Anti-Ballistic Missile (ABM) Treaty. It is generally accepted that NMD cannot be deployed without either amending or abrogating this treaty, something Russia (with which the US signed the treaty in 1972) is reluctant to do. Moreover, consistent Chinese opposition to the project has been characterised by warnings that Beijing may have to upgrade its nuclear forces if NMD goes ahead. Because other states, notably India, may feel obliged to react to the modernisation and expansion of

China's nuclear arsenal, some fear that NMD deployment may inadvertently trigger a new round of nuclear and missile upgrades that will do little to enhance global stability.

The US threat assessment, which names (in decreasing order of probability) North Korea, Iran and Iraq as the states most likely to develop missiles capable of attacking US territory, has been challenged on two grounds. Critics charge that the criteria against which threats are assessed have been manipulated to make threats easier to find, as for instance by redefining the 'United States' in such a way as make it appear the DPRK could attack it now when in fact only remote parts of Alaska are vulnerable. Certainly it appears hard to conceive a credible Iraqi or Iranian threat within any reasonable timeframe, though North Korea could deploy a primitive and unreliable intercontinental missile within five years given the will and continued access to the necessary resources.

The second challenge to the US threat assessment comes from the promise of political developments in North Korea and Iran. Both these regimes appear to be moderating those aspects of their policies which drive US perceptions of a missile threat. North Korea has already (September 1999) announced a freeze on missile testing, and more recently has shown signs of seeking some sort of accommodation with the US, South Korea and the west generally. For its part Iran has already announced that it plans no missile developments beyond the medium range systems just entering service. Because missile testing cannot be concealed from the US, these statements (and any breach of them) are immediately verifiable by US surveillance satellites. Thus, it might be argued, the most probable missile threat sources may be neutralised not by NMD, but by diplomacy.

Further, opponents of NMD argue that it does nothing to protect the United States against covertly delivered weapons of mass destruction—that is, WMD concealed in ordinary civilian traffic (such as cargo ships or aircraft). A weapon delivered by such means would simply bypass NMD, in a manner analogous to the way in which the elaborate French Maginot line defences were bypassed by Nazi Germany. NMD can do nothing to prevent this.

It is also argued by opponents of NMD that the US has not given due weight to the massive deterrent value of its existing military capabilities in protecting it against missile attack. Because the source of a missile attack cannot be concealed from US sensors, the launching state runs the risk of whatever retribution the US may choose to mete out. If the US has just lost a city, the American retaliation may be swift and extremely severe, in a 'remember Pearl Harbor' mode. Thus, it is claimed, NMD seeks to defend against what is already deterred.

The question of whether or not the US should go ahead with NMD has generated considerable debate. Public opinion polls in the US suggest that a majority of Americans want it. Both major political parties are in favour with the Republicans promising a more comprehensive system than that proposed by the Democrats. No matter who wins the US Presidential elections, it seems that NMD will be attempted in one form or another. There are several reasons for this but overwhelmingly, the US government has been persuaded

that NMD, if it can be shown to work, is a better alternative to reliance on the mutual assured destruction philosophy that underpins the 1972 ABM Treaty.

For the US, the 1972 ABM Treaty was a bilateral arrangement with the USSR draw up at a time when a viable defence against missiles seemed to be technologically out of the question. Three decades later, as the world leader in technology and other dimensions of power, the US does not want to grant other rising nuclear powers (China, obviously) the strategic parity that was granted to the former USSR in 1972. Moreover, even though 'states of concern' like North Korea may have moderated their behaviour, such change is an insufficient guarantee for Washington, especially when such states seek the capability to threaten the US with missiles.

Granted, attacks on the US with WMD by non-missile means are a possibility. But NMD is being designed to deal with missile attacks, assessed to be the most likely threat to US territory and interests and the US ability to exercise its power, influence and leadership around the world. Whether NMD can successfully defend America against missiles is a moot point, but the Americans believe they have the resources, the technology and a moral obligation to develop a means to do so.

America, nonetheless, is not insensitive to the concerns of Russia and China, and, it would appear, still regards the ABM Treaty as 'a cornerstone of global strategic stability'. Partly in deference to those concerns, therefore, President Clinton has deferred a decision on building an NMD but testing of the technology is expected to continue, along with the diplomatic efforts aimed at securing Russian agreement to amend the ABM Treaty to permit some form of NMD, and reassuring China.

If the US goes ahead with NMD, Australia may find itself caught between, on the one hand, its commitment and obligations to the US as guarantor of Australia's security and Australia's strategic interests in the Asia-Pacific region, and indeed globally, and on the other hand, Australia's budding new friendship with China. The dilemma may prove to be illusory because, difficult as it might seem, the US may yet be able to persuade Russia and China to accept its NMD proposal. But if it cannot, Australia will face some difficult choices.

Introduction

The United States' pursuit of a National Missile Defense (NMD) system to protect the country from limited attacks with weapons of mass destruction (WMD) delivered by ballistic missile is one of the most controversial American military initiatives of recent times. With the exceptions of Japan and Israel, the US has not been able to enlist the support of many allies for this effort, while both Russia and China are strongly opposed to the concept.¹ The United States would naturally like Australian support for the project and there have been some inconclusive signals that this might be forthcoming.² (The issue of Australian involvement is canvassed later in this paper).

On 1 September 2000 President Clinton announced that he would not authorise deployment of an NMD system 'at this time'. He pointed to the fact that some tests had failed, and that only three of 19 planned intercept tests had yet been conducted, and said that 'I simply cannot conclude with the information I have today that we have enough confidence in the technology, and the operational effectiveness of the entire NMD system, to move forward with deployment'.³ The final decision as to whether or not to deploy NMD, therefore, will now be made by the President chosen when the US electoral impasse is resolved.

This paper provides some background on the history and nature of NMD. Following this we present arguments for and against the concept and Australian participation in it.

It should be noted that this paper does not address the issue of Theater Missile Defense (TMD) which, together with NMD, comprises the US Ballistic Missile Defense (BMD) effort. TMD has little strategic significance, does not invoke international treaty issues and requires lesser, though still advanced, technologies. The difference is that TMD deals with slower short or midrange missiles (*Scud* derivatives or shorter range types), while NMD focuses on missiles capable of delivering warheads across intercontinental distances, thus bringing the US under threat of attack.

Background

Mutual Assured Destruction

During most of the Cold War period the US and the Soviet Union maintained large strategic nuclear forces consisting of pre-targeted land-based and sea-based ballistic missiles plus aircraft-delivered bombs and cruise missiles. Under the doctrine variously called Mutual Assured Destruction or Mutual Assured Deterrence (or, flippantly but accurately, Mutual Assured Disaster—MAD), each superpower had an assured capacity to destroy the other, even if attacked by surprise. This meant that there was no incentive to launch a nuclear war, and in this manner—at the cost of holding tens of millions of people hostage and immense resources invested in nuclear weapons, their delivery and command and control systems—the nuclear peace was secured.

A key element in this system was the 1972 Anti-Ballistic Missile Treaty (the ABM Treaty). This treaty forbade the deployment of ABM systems by either superpower beyond narrowly specified limits.⁴ The logic behind this was to remove any threat to the credibility of each side's nuclear strike capabilities, thereby guaranteeing the continued effectiveness of MAD. There is further discussion of the ABM Treaty later in this paper.

Attempts to Break Out

The United States made two attempts to break out of this standoff. In the seventies it began reconfiguring its strategic nuclear forces for so-called controllable or limited nuclear war, a process which continued into the eighties. More accurate delivery systems, culminating in the MX *Peacekeeper* intercontinental ballistic missile (ICBM) and the later *Trident D5* submarine-launched missile, both of which can reliably place a warhead inside a circle of only 90 metres radius from intercontinental distances, were intended to permit limited precision nuclear strikes. While the US argued that this meant that nuclear war, should it occur, would be less destructive, many analysts feared that such a conflict would prove uncontrollable (principally because of degradation of strategic command, control and communications systems in a nuclear environment) and rapidly escalate to a disastrous fullscale nuclear war. For their part the Soviets deprecated the changed American doctrine—echoing the concerns of independent western analysts such as Australia's Desmond Ball—but nevertheless set about improving the accuracy of their own delivery systems. The nuclear balance, though arguably more fragile, remained intact because the fundamental ability of each side to destroy the other was still there.

In the eighties the Reagan US tried a different breakout strategy. In 1983 President Reagan announced the Strategic Defense Initiative (SDI), popularly called 'star wars'. This was, according to the President, intended to render nuclear weapons 'impotent and obsolete' by constructing a defensive system which would take out after launch all hostile warheads aimed at the US. Had the US actually been able to deploy such a system, the Soviet

nuclear force would have—at least against the United States—become valueless, thus overturning the global nuclear balance. There were fears that rather than allow this to occur the Soviets might have initiated a nuclear war.

Shrinking Objectives, Expanding Budgets

However, though upwards of US\$17 billion was spent on SDI research between 1985 and 1990, its highly ambitious objectives proved quite unrealisable. With the end of the Cold War, Reagan's successor George Bush redefined SDI's objectives in 1991. The system, renamed GPALS (Global Protection Against Limited Strikes) was now intended to deal only with up to 200 incoming warheads. In 1997, under President Clinton, this objective too was reduced. The present NMD (as SDI/GPALS was renamed) objective is to deal with a low number of hostile warheads (between five and 20). NMD in its current form has been supported principally by the Republican-dominated Congress: there is a strong impression that the Democrat Administration has been somewhat of an unwilling passenger, and that it has only gone along with NMD to avoid confrontation with the legislature, which has been the driving force behind NMD since President Clinton came to office in 1993.

The following table gives funding of the SDI/GPALS/NMD since 1985.⁵

US Fiscal Year	Budget US\$ million	US Fiscal Year	Budget US\$ million
1985	1397	1993	3707
1986	2676	1994	2728
1987	3280	1995	2739
1988	3553	1996	3405
1989	3267	1997	3628
1990	3571	1998	3800
1991	3088	1999	3396
1992	3932	2000	2944

It can be seen from this data that notwithstanding the dramatically reduced objectives of the effort—which has shrunk from rendering nuclear weapons obsolete to a limited defence against a very few warheads—funding continues to be substantial. NMD today is managed by the US Ballistic Missile Defense Organization (BMDO).

NMD Today: What the US is Trying to Do

Unlike SDI, NMD is not intended to provide a reliable defence against massive attack by missile-delivered WMD, but to protect the US against limited strikes, probably initiated by one or other of the so-called 'rogue' states or perhaps by China. As the US Defense Department states:

The NMD program has been geared for some time to the possibility that a rogue nation could—perhaps sooner than intelligence has projected—come to possess intercontinental ballistic missiles that could threaten the United States ... The NMD system being developed would have as its primary mission defense of the United States ... against a small number of intercontinental ballistic missiles launched by a rogue nation. Such a system would also provide some capability against a small accidental or unauthorized launch ... from Russia or China. It would not be capable of defending against a large-scale, deliberate, attack.⁶

The Perceived Threat

Thus the US is developing NMD—as distinct from SDI or even GPALS—against quite small levels of threat. This is not to belittle the nature of such threats, because even one warhead—nuclear, chemical or biological—delivered by ballistic missile against a US city could cause serious loss of life and/or damage. But compared to the threat faced by the US in the days of the Cold War, the present threat is small.

Against this is the fact that the threat sources are behaviourally less predictable, or (in a backhanded sense) trustworthy, than was the former USSR. This is so because the Soviets were locked in a strategic nuclear standoff with the US, and could be relied on not to employ their nuclear arsenal except under extreme circumstances which both superpowers took exquisite pains to avoid.

At present the US identifies three states as potential sources of ballistic missile attack, though it does not claim that any of them has such a capability today. These states are North Korea—the Democratic Peoples' Republic of Korea (DPRK)—Iran and Iraq. All have a history of ballistic missile development, and all have long histories of poor relations or worse with the US and the west.

North Korea has developed the *No Dong* medium-range ballistic missile. In 1998 it tested an ICBM, *Taepo-Dong 1*, under the guise of an attempted satellite launch. (It is even conceivable that this was not a cover story but a genuine attempt to place a satellite into low earth orbit. If one can do this, one can develop an ICBM from such a launcher relatively quickly. This is why, during the Cold War, the Soviet launch of *Sputnik* in 1957 caused such alarm in the west.) However, the third stage failed and the vehicle fell into the sea beyond Japan. Notwithstanding the failure, the Japanese were greatly disturbed by this development—which clearly demonstrated the direction of DPRK rocketry—and therefore looked to the US for protection from ballistic missile attack. Japan in any case can be threatened with much shorter-range missiles than an ICBM: the DPRK is physically capable of attacking Japan with missiles today.

Both *Iran* and *Iraq* possess short and medium range ballistic missiles. Like the North Korean missiles, these are developments of Soviet types. The Iraqi use of *Scud*-type missiles in the 1991 Gulf War is well known, as is their inability to affect the outcome. The performance of the US *Patriot* system against the *Scud* attacks is invoked by both

supporters and opponents of NMD, but in truth this topic offers fewer useful lessons than might be thought.⁷ The characteristics of an Iraqi *Scud* bear little comparison (especially as to re-entry velocities, decoys and 'penetration aid' devices intended to confuse any defence) to those of any ICBM; likewise, those of *Patriot* do not really relate to those of systems proposed for the modern NMD program.

In February this year the CIA assessed the threat as follows:

Over the next 15 years, however, our cities will face ballistic missile threats from a wider variety of actors—North Korea, probably Iran, and possibly Iraq ... while the missile arsenals of these countries will be fewer in number, constrained to smaller payloads, and less reliable than those of the Russians and Chinese, they will still pose a lethal and less predictable threat.

North Korea already has tested a space launch vehicle, the *Taepo Dong-1*, which it could theoretically convert into an ICBM capable of delivering a small biological or chemical weapon to the United States although with significant inaccuracies. Moreover, North Korea has the ability to test its *Taepo Dong-2* this year; this missile may be capable of delivering a nuclear payload to the United States.

Most analysts believe that Iran, following the North Korean pattern, could test an ICBM capable of delivering a light payload to the United States in the next few years.

Given that Iraqi missile development efforts are continuing, we think that it too could develop an ICBM—especially with foreign assistance—sometime in the next decade.⁸

In sum the CIA assessment is that the DPRK ICBM threat is imminent, while that from Iran is longer-term and that from Iraq is problematical at this time. In any event, these are the threats which the United States believes justifies its enormous investment in ballistic missile defence programs. Whereas the original SDI was intended to defend against a massive Soviet attack with over a thousand missiles and (because of multiple payloads on some missiles) even more warheads, the present NMD program is an attempt to defend against hardly more warheads than a person could count on fingers and toes.

In fact, some NMD proponents are already claiming that what is presently planned will not be enough and that options for the future should not be closed off. On 17 April 2000 twenty five Republican US Senators wrote to President Clinton warning that a single NMD site 'cannot effectively protect the United States' and that 'more than a single site is necessary'.⁹

The Nature of the Technological Challenge

The drastic reduction in objectives for US ballistic missile defence projects since the original SDI gives some idea of the scope of the technological challenge facing NMD developers. It soon became apparent that the original SDI concept was simply

unachievable, and remains so today and for the foreseeable future. There is no defence against attack by thousands of nuclear warheads re-entering the atmosphere from space.

It is also important to note that modern NMD, unlike its sixties and seventies counterparts, does not use interceptor missiles fitted with nuclear warheads. These provided a large radius of destruction, and thus made targeting a somewhat simpler process. Modern systems, however, rely on non-nuclear interceptors—typically kinetic energy or 'direct impact'—and therefore require pinpoint precision from interceptor missiles if an incoming warhead is to be destroyed. (The use or testing of nuclear interceptors would be a violation of one or more international treaties—the Partial Test Ban Treaty of 1963, which forbade atmospheric detonations, and the Outer Space Treaty of 1967, which prohibits the use or stationing of nuclear weapons in space).

NMD proponents argue that, however unrealistic the objectives of SDI, NMD is another matter entirely. Perhaps 20 warheads are involved. With these numbers, surely a defence is feasible.

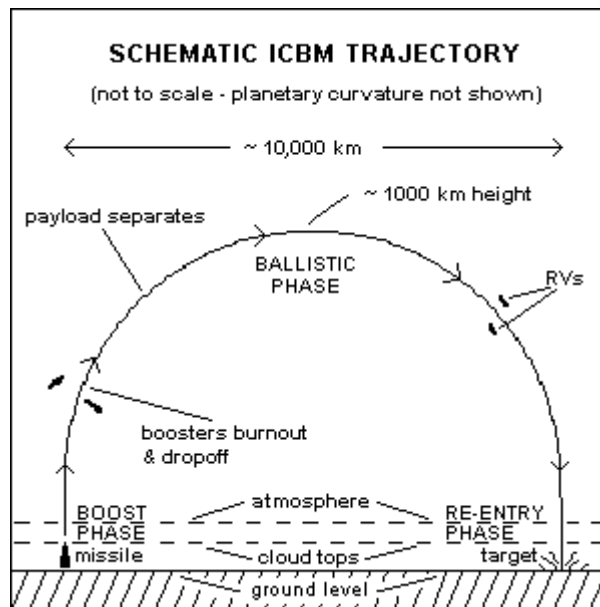
Ballistic Missiles

Missiles are 'ballistic' if, once their fuel is expended on launch, they then travel under the influence of gravity (and air resistance) alone, like a ball thrown into the air. The missile is launched on a precise trajectory intended to curve up into space and then descend under gravity to the target. The missile consists of propellant stages and a payload—the latter being warhead(s), possibly plus decoys and other penetration aids, all known as *re-entry vehicles* or RVs. In space, the payload separates from the missile, re-enters the earth's atmosphere and continues to the target. The precise speed of re-entry depends mostly upon the range of the missile—the longer the range, the higher the re-entry speed: for an ICBM, re-entry velocities are typically about 4 nautical miles (7.4 km) per second (about 26 600 km/hour or 14 400 nautical miles per hour).¹⁰

Thus a ballistic missile trajectory from launch to target consists of three phases (see following schematic):

- *Boost phase*, where the rocket motors are fired to lift the missile into space. A missile with its rockets burning is highly visible and (relatively) easy to detect with infrared sensors; moreover, at this time it still consists of missile and payload in a single package. Thus destruction during boost phase ends all threat from a missile. For a missile with a 6000 nautical mile (11 100km) range, boost phase lasts about 5–10 minutes.
- *Ballistic phase*: once the rocket motors shut down the missile follows a trajectory determined by its speed and earth's gravity. Soon after boost phase the payload separates from the missile, which falls away and burns up in the atmosphere. Because no motors are active, detection of a missile in ballistic phase is much more difficult than in boost phase. Ballistic phase consumes most of the travel time from launch to target.

- *Re-entry phase*: the payload (warhead(s) plus decoys and penetration aids) re-enters the earth's atmosphere. On re-entry the payload components will be heated to high temperatures by friction with the atmosphere, again making them more easily detectable. But re-entry phase is only about the same duration as the boost.



(Diagram drawn by Gary Brown.)

A missile in boost phase is the easiest and most desirable target: easiest, because the rocket motors provide a highly visible signature; desirable because the missile and payload are still together. On the other hand, boost phase is short, and to effectively target a missile at this time requires (relative) proximity to the launch site.¹¹ Ballistic phase is longest, but there is no rocket motor heat signature—though the payload will still have a much less visible thermal emission profile—and the missile is at its most distant from earth. Re-entry phase provides heat signatures from the payload components, but they are small and are, moreover, moving at speeds measured in kilometres per second, making them difficult targets.

Dealing with a ballistic missile attack basically involves three tasks:

- detection: the target must be detected, identified and confirmed as hostile
- tracking: once detected the target must be continually tracked (separating decoys from real warheads) in order to determine its trajectory and impact point and
- targeting and kill: the missile warhead must be targeted and a weapon of some kind used to destroy it.

All this must be done in the approximately 30 minutes between the launch of an ICBM and the payload's arrival on target. It must, moreover, be done in the face of any decoys and dummies and against very high speed targets.

Design of the US System

Essentially NMD is intended to combine a space-based early-warning detection system with ground-based non-nuclear anti-missile missiles. It would consist of five elements:

- ground-based interceptors (GBIs): the GBI is essentially a high-speed missile system designed to destroy incoming warheads by direct impact. It is directed onto targets identified by early warning and tracked by radar. The US proposes in the first instance to deploy up to 100 GBIs.
- battle management and command, control and communications (BMC³): BMC³ is the central control module of the system, through which information reaches controllers and instructions are issued to other elements, including the GBI.
- X-band radars: these are highly sensitive radar systems designed to track potential targets, discriminate between targets, decoys and irrelevant signals and to assess whether an attempted kill has been successful. They are intended to provide continuous real-time target tracking, something essential for NMD.
- upgraded ground based early warning system: the US has had early warning systems for decades. Their ground component consists of powerful phased-array radars. The upgrade will be less to these radars than to the software which processes their output.
- satellite/space-based infrared detection system: this is the satellite early warning component (the Cold War system was the Defense Support Program, whose satellites detect missile launches and pass the data to ground stations, including Nurrungar in Australia until that station's functions were recently transferred to Pine Gap). The DSP satellites are still in use but may be replaced during the present decade with more capable sensors, named SBIRS—Space-Based Infrared System.¹²

The overall difficulty of the task is perhaps best described in a document allegedly supplied by the US Government to Russia in January 2000, and later leaked in Russia:

In view of the operational realities of the defense of a large area, a limited strategic missile system consisting of 100 non-nuclear interceptor missiles will be able in the best case to destroy 20–25 warheads on impact with comparatively primitive defense penetration aids. Two hundred interceptor missiles could destroy 40–50 warheads.¹³

The current US plan is to develop an initial system, consisting of 20 interceptors, as soon as possible, and then to expand this to include 100 GBIs based in Alaska. The initial system architecture will incorporate upgrades to the five existing ballistic missile early

warning radars and an advanced X-Band Radar will be built at Shemya, Alaska. The NMD system will, if planned developments proceed, use the Space Based Infrared System, intended to replace the existing Defense Support Program satellite constellation to detect initial launch.¹⁴ (As noted later in this paper, however, SBIRS is now under question by senior US government officials). However, to do even this much—let alone move to more extensive deployments later—will require changes to the ABM Treaty.

The Anti-Ballistic Missile Treaty

The ABM Treaty was signed by the US and the then USSR in 1972, nearly 30 years ago, in an era of nuclear superpower confrontation. It was an attempt to stabilise the strategic balance between the superpowers by guaranteeing each's ability to destroy the other even after surprise attack, preserving their Mutual Assured Destruction capabilities. It has remained in force ever since it was ratified and is of unlimited duration.

No-one, least of all the US itself, disputes that a US NMD deployment would violate the ABM Treaty as it stands. For this reason the US has been urging Russia, which inherited the former USSR's ABM Treaty rights and obligations, to agree to certain treaty amendments. These proposed amendments would permit deployment of a single-field 100-missile ABM system. But the US reportedly has advised Russia that further modifications to the ABM Treaty, beyond those already proposed, would be necessary if NMD went beyond the initial deployment.¹⁵ Russia's public attitude to NMD, and to suggestions for changes to the ABM Treaty, has nonetheless remained consistently negative.

Much opposition to NMD centres on the need to alter the ABM Treaty. Opponents argue that the treaty remains a key underpinning of global strategic nuclear stability and should not be weakened or watered down. NMD proponents, however, say that the Treaty is a Cold War relic, that it does not need to be cancelled but merely amended and modernised, and that the US proposals, though effective against limited attacks from 'rogue' states, in no way threaten the credibility of the Russian nuclear force, which still has thousands of deliverable strategic nuclear warheads at its disposal.

The ABM Treaty certainly gives Moscow a useful device for inhibiting US NMD development: beyond a certain point, the US cannot proceed without either securing treaty amendments or unilaterally withdrawing from its ABM treaty obligations.¹⁶ While the latter is possible, it would leave the US open to severe international criticism as the nation which ended a treaty regime which has endured for nearly three decades. Moscow no doubt calculates that this will make it more difficult for the US to unilaterally abandon the treaty.

In any event, the ABM Treaty is an issue which must be addressed by way of agreed amendment, unilateral withdrawal or simply breaking the treaty before any deployment of NMD as currently proposed will be possible.

Arguments in Favour of NMD

The reasons why the US should not proceed with NMD are discussed below. In this section of the paper, we flag the main arguments that have been made in the US by those who support continued NMD research, development and ultimately, deployment in one form or another.

Politically, NMD is a popular cause in America in the sense that neither of the two main political parties are opposed to developing a missile defence and it was not an issue during the recent Presidential campaign. Indeed, recent opinion polls suggest that a majority (55 per cent) of Americans support having an effective NMD system capable of defending the US against a limited ballistic-missile attack (whether accidental, unauthorised or deliberate).¹⁷

The Threat to Americans and American Interests

There are presently over 1000 Russian missiles and 6000 warheads in an unknown state of repair, all capable of targeting US cities. China has just 20–30 missiles and the same number of warheads. The US does not expect it will be attacked by either Russia or China but there have been incidents in the past when Russian missiles came close to being launched by mistake.¹⁸ If there is an accidental or unauthorised launch of a Russian or Chinese missile, the US at present has no way to protect itself.

Nor can the US protect itself from missiles deliberately fired. In this context, US defence planners are greatly concerned by what they perceive to be a growing threat posed by the global proliferation of WMD and missiles to 'irresponsible nations'.¹⁹ According to US Secretary of Defense, William S. Cohen, there are two dozen countries that have developed or are developing weapons of mass destruction.²⁰

In Cohen's view, missiles and WMD in the hands of irresponsible states threaten the US and its allies. Possession of such weapons might also preclude the US from taking action to defend its national security interests, that is, to intervene in crises around the world.²¹ Cohen claimed that for America, there was no more important issue than protecting the American people from the threat posed by states seeking to acquire nuclear, chemical and biological weapons and the long range missiles to deliver them, such as North Korea, Iran and Iraq.²²

These new threats from 'irresponsible states' (once known as 'rogue states' and now 'states of concern') are not covered by the strategic arms agreements reached between the US and the former Soviet Union. Advocates of NMD argue that if it is now technologically possible to defend the US from attack by WMD, it is immoral not to do so. According to Henry Cooper, Chairman of the Heritage Foundation's Commission on Missile Defense, the traditional mix of deterrence and arms control diplomacy has merit, but when dealing

with adversaries that do not share the same values as the US, it would be foolish to rely on deterrence alone, especially when NMD is technologically feasible.²³

North Korea and Other 'Irresponsible Nations'

Pressure for early deployment of NMD has eased with North Korean undertakings not to conduct further missile flight tests. But the US continues to be concerned. From the US perspective, North Korea's track record for being a predictable and responsible member of the Asia-Pacific community has not been good. In a major statement to the US Senate Armed Services Committee on 25 July 2000, Secretary Cohen stated that North Korea was continuing with ground testing and could break its moratorium and begin flight testing of an intercontinental range *Taepo-Dong-2* missile at anytime, with deployment in the next few years.²⁴

Leaving aside the reliability of North Korea's promise to halt testing, the US fears that other 'states of concern', such as Iraq, Iran and Libya, are intent on acquiring nuclear, chemical and biological weapons and the long range missiles to deliver them. North Korea is exporting missile equipment and technology to these nations. They also have access to missile technology from Russia and China and are engaged in missile trading with other states such as Pakistan and Syria.²⁵

According to Secretary Cohen, Iraq would almost certainly restart its long range missile development if freed from international sanctions. Despite signs of domestic political reform and a less fundamentalist foreign policy, Iran still has an active ballistic missile program while Libya has been seeking long range missiles for many years.²⁶

The US intelligence community judges that the US will face ICBM threats from North Korea, Iran and possibly Iraq over the next 15 years as well as having to deal with the longstanding missile capabilities of Russia and China.²⁷ The time scale may be longer, but for American military planners dealing with foreseeable capabilities, the continuing spread of WMD and missile technology makes an NMD defence a 'prudent adjunct to classic offensive nuclear deterrence' and preventative arms control measures.²⁸

For Cohen and the proponents of NMD, the argument that 'states of concern' may behave rationally, like the US, China or Russia, and may therefore be deterred by the threat of an overwhelming response is unconvincing and should not be relied upon.²⁹ It assumes 'an unfounded faith in America's capacity to understand and to know how to manipulate the perceptions and leaderships in 'states of concern'.³⁰ In Cohen's view, the behavioural record of authoritarian states such as Iraq and North Korea shows that their leaders are indifferent to the fate of their people and they might be prepared to start a regional conflict in the belief that their missiles would deter the US from intervening. From the US perspective, deterrence might work most of the time, but to be on the safe side when dealing with 'states of concern' that are hostile to the US and its interests, it is better to have the insurance of an active defence or safety net, that is, an NMD. It would make the

threat of a missile attack against an American city futile (assuming that NMD can provide a reliable shield).³¹

The Technology Issue

NMD technology is not intended to deal with 'suitcase' terrorism. It is being designed to deal with the threat of a missile attack that the US intelligence community assesses as the threat that is most likely to emerge in the next 15 years. Because a workable NMD system has been likened to hitting a bullet with a bullet, many commentators have suggested that it is impractical, too costly, potentially destabilising and therefore pointless. They have referred to the failure of several US tests and/or questioned the validity of those tests that were successful. US National Security Adviser Sandy Berger, commenting on President Clinton's announcement that he would defer a decision on NMD, stated that the technology was promising, but there was not enough information so far to conclude that NMD was 'technologically feasible, operationally effective and could work reliably under realistic conditions'.³² Berger added however, that the threat was real and the US had an obligation to pursue a missile defence system that added to the defence of America.³³

But fielding a workable system takes time. The US Defence Department's spokesman for the NMD program, Lt Col Rick Lehner, said that there would always be a lot of failures in the early part of a program as complex as NMD, as there were with earlier space and missile programs.³⁴ After all, the United States failed 13 times before successfully orbiting the world's first spy satellite in 1960 and it took ten years between making the decision and actually landing a man on the moon.³⁵

It should be borne in mind that the technology associated with NMD is based on research, engineering and development that has taken place over several decades and is constantly evolving.³⁶ It has reached the stage, according to US government experts, where it is progressing by 'leaps and bounds'.³⁷ There have been failures associated with the 'rush to succeed' by 2005. But these were only the initial tests and many others have been planned.

According to Walter B Slocombe, US Under Secretary of Defence, no new technologies were required for the proposed NMD. Rather, it was a matter of taking technologies that had already been developed and integrating them into a system. He claimed that NMD actually had 'a very mature technology base on which to build an operationally effective system'.³⁸ The Director of the BMDO, General Kadish has conceded that locating and tracking a warhead in mid-flight and hitting it ('the hit a bullet with a bullet concept') was difficult. He has claimed however, that intercept tests conducted since 1999 showed that the technology to do so was achievable and had in fact been 'demonstrated repeatedly'.³⁹

According to Secretary Cohen, notwithstanding the failures, the tests have so far 'demonstrated the success of the bulk of the NMD system's critical engagement functions'. He claimed that the failure of the 7 July 2000 test did not show, as had been claimed, that the system was not technologically feasible. On the contrary, despite the failure, the test

demonstrated that the sensors and battle management systems could and did work together as an integrated system while satellite sensors and upgraded early warning radars worked as specified or better than anticipated.⁴⁰

The Countermeasures Argument

It has been argued that it is relatively easy for an aggressor state to overcome a US NMD system by saturating it with countermeasures such as decoys and multiple warheads. But from America's own experience with countermeasures, it appears that effective countermeasure technology is not easy to manufacture, mount and deploy on a missile.⁴¹ In any case, according to the Secretary Cohen, the US was constantly developing its 'advanced discrimination and kill technologies' and, given 'the multiple shot opportunities' built into the NMD concept, the US was confident of its ability to distinguish decoys and make successful intercepts against multiple warheads.⁴² According to General Kadish, the US had the technology to defeat the kind of simple countermeasures that the US intelligence community assessed it might encounter in missiles fired by the primary states of concern—North Korea, Iran and Iraq. He stressed that the US was not trying to defeat sophisticated countermeasures that might be devised by other countries (implicitly, China and Russia, and they should be reassured that America's NMD was not aimed at their strategic deterrent capabilities and therefore they should not have an interest in decoy proliferation).⁴³

The ABM Treaty

The ABM Treaty is a hallowed bilateral Treaty, drawn up and signed by the US and the Soviet Union at the height of the Cold War in 1972. It is not a Treaty between the US and China. It does not restrain China, North Korea, Pakistan or any other country from targeting the US and developing an ABM system. Yet if the ABM Treaty is preserved, it also preserves US vulnerability. It restricts the US to a geographically very limited land-based missile defence, (and none at all if China and Russia have their way). The USSR meanwhile, has ceased to exist. So too have the conditions that prevailed when the ABM Treaty was signed in 1972—the technology to make WMD and missiles has proliferated around the world while at the same time there is now a workable technology available in the US to intercept such missiles.⁴⁴

According to the Heritage Foundation's Henry Cooper, the ABM Treaty might provide strategic stability but its MAD foundation amounted to a mutual suicide pact (a balance of terror) in which the signatories were sitting down with cocked rifles at each other's heads. He argues that it is time for the US to move away from a mutual hostage situation, especially given the availability of new technologies to deal with the problem. The counter argument is that the US should seek security through arms control negotiations. The response to that is that this might work for some countries, such as China and Russia, but not for others.⁴⁵

From the American viewpoint, it is strategically disadvantageous and unwise to extend the benefits of a MAD-doctrine, drawn up in a bilateral ABM Treaty with the USSR in 1972 to any other country that decided to develop long range missiles and WMD. It requires the US to leave itself undefended and exposed to the threat of missile attack and/or coercive diplomacy from countries like North Korea, Iraq, Iran and other 'states of concern', including, perhaps at some time in the future, China. For many Americans, it does not make sense—morally, politically, or strategically—to deliberately allow the US to remain vulnerable to missile attack at a time when the technologies to develop a defensive shield are fast becoming available. Republican Presidential candidate George W. Bush has made his choice clear. He has called for a comprehensive national missile defence system and stated during his acceptance speech at the Republican National Convention that 'now is not the time to defend outdated treaties (the ABM Treaty) but to defend the American people'.⁴⁶

There have been demands from some NMD advocates that the ABM Treaty should be abandoned altogether because of the restrictions it places on the ability of the US to defend itself against missile attack.⁴⁷ However, the Clinton Administration has sought to work within the constraints of a modified Treaty and presumably the next Administration will do likewise. Senior Administration officials have declared that the US remains committed to maintaining the Treaty as 'a cornerstone of strategic stability' and a key element in US relations with Russia.⁴⁸ What the US Government has in mind, it says, is the development of a capability to defend American cities, Hawaii and Alaska against a limited strategic ballistic missile attack. It claims that it does not aim to subvert the strategic capabilities of either Russia or China.

US Under Secretary of State for Arms Control and International Security John D Holum accepts that the ABM Treaty should be preserved as a cornerstone of strategic stability. But, he said it would be more viable if it was also updated to take account of threats that were not contemplated when it was negotiated nearly 30 years ago.⁴⁹

The issue, according to Secretary Cohen, is not a matter of choosing between, on the one hand, arms control and the ABM Treaty, and on the other, defending the American people against a missile attack. He has argued that the ABM Treaty allowed for revisions to take account of strategic change and did not ban missile defences altogether.⁵⁰ Indeed, the ABM Treaty permits fixed land based ABM systems and it is noteworthy that Russia has deployed such a system to defend Moscow for many years. This has provided Moscow with a layered defence of 100 interceptors, the same number that the US is proposing to base in Alaska as part of its limited NMD.

From the US perspective, the fundamental principle of the 1972 Soviet–US ABM Treaty was to ensure that each party's strategic deterrent was not threatened by missile defences of the other. According to General Kadish, the limited NMD system envisaged by the US would not threaten Russia's strategic deterrent because it cannot defend the US against a massive attack involving hundreds of warheads.⁵¹

Russia and China

The US is not rushing ahead with NMD whilst blithely ignoring the concerns of Russia and China. US concern about the potentially negative impact of NMD on Russia and China, and the risk of a new missile arms race with spillover consequences in South Asia was one reason why President Clinton delayed a decision on NMD for the next US Administration to decide.⁵² In the meantime, the US has sought ways to enlist the cooperation of China and Russia, possibly by including them in a 'global protection system'.⁵³

Rather than destroying its strategic relationship with Russia, the US aims to build on it by persuading Russia to accept revisions to the ABM Treaty so as to allow a limited defence against a few missiles that might be launched accidentally or which might be launched deliberately by 'states of concern'. The US seeks to convince Russian that this is not the thin end of a wedge and that on the contrary, NMD, as currently proposed, will not defend the US against a massive attack in a way that undermines Russia's deterrent capability.⁵⁴ It has kept Russia fully informed of its proposals and its progress in developing an NMD system. At the same time, the US has continued talks with Russia on further reductions in offensive nuclear weapons under START III (Strategic Arms Reduction Talks).

There are now signs that Russia's previous insistence that the ABM Treaty was inviolable and immutable was merely a negotiating ploy. The Commander of Russia's Strategic Rocket Forces, General Vladimir Yakovlev said on 13 November 2000 that Russia would negotiate seriously on a trade-off allowing the US to deploy a first phase of NMD in exchange for deep cuts in strategic nuclear weapons.⁵⁵ But even without Russian cooperation and agreement, the US believes it can develop a limited NMD without destroying the ABM Treaty.⁵⁶

The China Problem

Russia might be easier to convince about NMD than China. The limited NMD under consideration by the Clinton Administration was intended to deal with perhaps two or three missiles fired from Asia and the Middle East, whether launched deliberately, by accident or without authority. The Clinton Administration envisaged the development of 20 ground based interceptors capable of blocking such an attack, but this was subsequently expanded to as many as 250 interceptors by 2010. This would be enough, it seems, to knock out a few dozen missiles (based on a ratio of four to one), whilst leaving the huge Russian arsenal intact. However, on a ratio of four to one, it is a number that approximates the force needed to knock down China's small arsenal of 20–30 missiles.⁵⁷

The US however, avowedly seeks China's acceptance of its rationale for revising the ABM Treaty. It has offered high-level assurances to China.⁵⁸ The latter, however, is suspicious of the US and remains opposed to NMD. It sees the US NMD plan as an attempt to

achieve absolute strategic superiority and hence the ability to use unchecked force in international affairs.⁵⁹

But China is not against all missile defences. In an interview in February 1999, China's Director General of Arms Control and Disarmament, Ambassador Sha Zukang said China was 'not opposed to the development of a genuine TMD' but was opposed to systems developed in the name of TMD that have potential strategic defence capabilities that violate the ABM Treaty and go beyond legitimate self defence.⁶⁰ Sha's views suggest there may be a possibility of Chinese agreement to amend the ABM Treaty so as to allow for a boost phase missile defence that utilizes TMD assets. Such a system would not threaten the deterrent capabilities of either China or Russia because their ICBM launch sites would be out of range of the interceptors.⁶¹

However, until it is persuaded otherwise, China's starting position is to simply object to NMD. The Chinese Ambassador for Disarmament Hu Xiaodi has claimed that the US pursuit of NMD will weaken the ABM Treaty and thereby upset the global strategic balance. It will impede arms control and undermine non-proliferation.⁶² From Beijing's viewpoint, NMD will give the US unilateral strategic superiority. China will become insecure and in response it has threatened to adopt 'necessary measures' to guarantee its second strike nuclear capability.⁶³ That is, China will increase the number of its missiles and warheads and develop countermeasures.

If NMD does proceed and if the Chinese response it to adopt 'necessary measures', it ought not to feel threatened by NMD, as presently conceived. According to the Director of the BMDO, General Kadish, the limited NMD plan envisaged by the US could neither defend against a massive attack involving hundreds of warheads (as Russia had) nor defeat more sophisticated countermeasures (that China could devise). He claimed that the NMD that the US had in mind was limited to dealing with a few long range missiles with simple counter measures, not Russian or Chinese capabilities.⁶⁴

But irrespective of the official description of NMD and its limits, many influential US commentators perceive China in a more negative light. They claim that irrespective of NMD, China is steadily modernising its strategic rocket force with more mobile, longer range and more accurate ICBMs such as the DF-41 (range 12 000 km), as well as strategic systems such as the JL-2 SLBM (Submarine Launched Ballistic Missile) and the Type 094 SSBN (Nuclear-powered Ballistic Missile Submarine).⁶⁵ These systems will become the basis for a Chinese second strike capability that will eventually elevate China beyond its current posture of 'minimum deterrence', (that is, one based on the survival of a small number of nuclear weapons that enable China to retaliate after a first strike) to limited deterrence (that is, a concept that includes the possibility of a pre-emptive first strike).⁶⁶ In the view of these commentators, China is seeking parity with the US so as to recreate a bipolar strategic military situation reminiscent of the US and USSR during the Cold War, but this time with China and the US as the two opposing poles.⁶⁷

China moreover, does not conform to US values. From a conservative American perspective, China is a competitor, not a partner. It is an authoritarian one party state, non-Christian, and non-European. It also has a less than perfect record on the non-proliferation of the technology associated with WMD and long range missiles.⁶⁸ And it is developing its own missile defences with TMD technology from Russia.⁶⁹ China, furthermore, demonstrated a willingness to use missiles against Taiwan in 1995–96 and at the time, a senior general, Xiong Guangkai, suggested in effect that because China could target Los Angeles with an ICBM, the US would not intervene.⁷⁰

From the viewpoint of a Republican Administration, therefore, China rates as a country of potential concern. From an American strategic perspective, there is no sense or obligation for the US in allowing China to catch up and reach a point where it is on a par with the mutually assured destruction relationship that the US once had with the former Soviet Union.⁷¹ That is, a Sino-US relationship based on the MAD doctrine of the ABM Treaty. This would be an unhappy and hostile relationship because it would rest on US acceptance of a Chinese right to attack the US with nuclear weapons and vice versa.⁷² It could lead to brittle stand-off scenarios in the Asia-Pacific region similar to those that beset US-Soviet relations in Eastern Europe during the Cold War. The result would likely be a shift in the balance of power in Asia. China would end up in a more favourable position and could limit the ability of the US to exercise power in East Asia, for example, to defend Taiwan and to support friends and allies like South Korea and Japan. This tilt in the balance of power might make the US more inclined to disengage from the Western Pacific.

Arguably, such an outcome is not in Australia's strategic interests.

Decoupling the US From Friend and Allies

There will always be gradations of risk and circumstances will vary when and where the US might or might not intervene militarily. In the US view, missiles with a WMD warhead might not be used to actually attack US territory because the delivery could be executed by simpler non-missile means, such as a suitcase or a merchant ship. The suitcase argument however is a red herring. It is missiles that have become important regional weapons insofar as many countries regard them as providing a level of prestige and a means of conducting coercive diplomacy and deterrence that non-missile means do not.⁷³

Therefore, looking down the track a little, if the US finds itself unable or unsure of being able to defend the American homeland because of the risk of a missile attack, it may think twice about becoming involved in certain situations, such as it did during the Gulf War in 1991, or in Kosovo in 1999. Excluding the oil factor, it is not difficult to envisage the US becoming reluctant to lead the rest of world if there was a risk of a missile attack on the continental US. It might hesitate to intervene in the Middle East in support of Kuwait, Israel or Saudi Arabia. In East Asia, it might be reluctant to support friends and allies such as South Korea, Japan, Taiwan or even Australia.

If the US is unable or unwilling to assure Taiwan of its continued military support, Taipei might be tempted to build its own deterrent capability and resume development of nuclear weapons and the missiles to carry them.⁷⁴ Taiwan suspended research on nuclear weapons and the development of short range ballistic missiles in the mid-1980s after being persuaded to do so by the US, presumably because the latter offered adequate guarantees of protection. After China fired missiles straddling Taiwanese ports in 1995 and 1996, the Taiwanese considered the possibility of a counter strike capability that included nuclear weapons and intermediate range ballistic missiles.⁷⁵ The possibility of a missile arms race in the Taiwan Strait is not in the interests of any country in the Asia-Pacific region.

Similarly, if the US is unable to guarantee allies like Japan and South Korea that it can defend them against missile attacks, whether from North Korea or elsewhere, they may accommodate the pressure and downgrade their security ties with the US. This would weaken the US alliance framework that underpins security and stability in the Western Pacific.⁷⁶ On the other hand, Japan might respond by developing its own strategic missiles and WMD as a form of deterrence. Either way, the outcome would not be in Australia's strategic interests.

From the US perspective, missile defences complement deterrence. They enhance its ability to fulfil security commitments to allies and friends. NMD makes it less likely that an adversary of the US will threaten or coerce the US using ballistic missiles armed with WMD. According to US Under Secretary for Defence, Walter Slocombe, NMD would 're-ignite the commitment of the US to support its allies and friends, from NATO to Israel to the Persian Gulf to Northeast Asia in the event of them facing a threat from a rogue state'.⁷⁷

A Three Legged US Defence Strategy?

The same philosophy that made SDI appealing is still attractive in America. The US wants to build on arms control and maintain deterrence but it also wants to move beyond deterrence to developing a defence against missile attack as a third leg. This may not have been feasible in 1972 but technology has progressed dramatically since then. As US Under Secretary of Defence for Acquisition and Technology, Paul G Kaminski explained, the US strategy to deal with the threat of a missile attack had three components

- preventing and reducing the threat through arms control regimes, such as MTCR, NPT, the Framework Agreement with North Korea, the INF Treaty and the START II Treaty with Russia
- deterring a missile attack by the threat of retaliation and
- defending the US against attack with NMD.⁷⁸

The end result is a stronger US. There may be a downside, but a strong US that is able to play a leadership role in world affairs is arguably preferable to an inward looking US that is unwilling to lead.

Arguments Against NMD

NMD has been advanced as a cure to the ballistic missile threats perceived by the US. There are a number of issues—some essentially matters of technical judgement, others with a substantial policy component—which strongly suggest that the system should not proceed.

A Case of Disproportionate Response

In any military matter it is wise to weigh up the threat posed against the nature of a proposed response. In general a response will be considered *prima facie* effective as long as it does not involve too heavy an investment of resources in comparison to the level of threat. Thus, a single submarine might force an opposing navy to deploy large numbers of surface ships, aircraft and friendly submarines. If by posing a threat at relatively low cost a 'aggressor' country can draw an opponent into acquiring and deploying extensive high-cost countermeasures, it has succeeded in evoking a disproportionate response far more burdensome to the opponent than posing the threat was to the 'aggressor' in the first place.

The discussion above (see pp.4–5) shows that the US perceives the ballistic missile threat as coming from North Korea, Iran and Iraq, in that order of probability. Yet a closer scrutiny of American threat analyses suggests not only that these threats are presently unreal (something the US freely states) but that there is no guarantee at all that any of them will ever materialise (something it would vigorously dispute).

Moving the Goalposts

US threat assessments are reported in a document called *National Intelligence Estimates* (NIE) prepared by the National Intelligence Council, which is composed of representatives of the whole US intelligence community. The NIE assessment is reflected, as far as NMD goes, in statements made by the BMDO and other agencies to Congress and elsewhere. The most recent comprehensive statement was made by the CIA to Congress in February this year—it is this document which has been used most extensively in this paper.

However the NIE has been challenged on several grounds. First, that it arrived at a higher ballistic missile threat to the US by 'moving the goalposts'—i.e. by making the definition of what constitutes a threat easier to meet. Thus it substituted what was *possible* in the way of future developments for what was *probable*, the earlier standard. Again, it made it easier to identify a threat to the US by redefining the US as the whole territory thereof

instead of the 48 contiguous states, as previously. This made it possible to claim a North Korean threat to the US because some remote parts of Alaska could just be reached by *Taepo Dong 1* with a minimal payload, though the main part of the US remains unreachable. Finally, the NIE changed the criterion for a threat from when a country could *deploy* a long-range missile to the much easier to meet requirement of when a country could first *test* a missile.⁷⁹

Thus it appears that in recent times the US has been redefining threats in such a manner as to magnify them, thereby creating an apparent justification or requirement for countermeasures which, on another assessment, might be unnecessary. This is in fact not unusual conduct for the US defence and intelligence establishment: in the last years of the Cold War, with Gorbachev in power in Moscow and the Soviet Union in obvious military decline, the Pentagon continued to issue an alarmist military assessment, *Soviet Military Power*, which made the most extraordinary claims about the USSR's military capabilities at a time when the state was in fact on the verge of collapse.⁸⁰ The motive in this case was similar to that driving those who seek to magnify the NMD threat—to preserve a budget and organisation which might otherwise come under close scrutiny. The Pentagon's use of this device was unsuccessful in preventing post Cold War defence budget cuts; it remains to be seen whether exaggeration of the missile threat to the US will have more success.

North Korea (DPRK)

The place of North Korea at the top of the US threat list (which in any case numbers only three states for an ICBM threat) comes about primarily because that country has experimented for longer, and with longer-range vehicles, than any other. In all probability it could indeed deploy a primitive (unreliable and inaccurate but with intercontinental range) ICBM inside five years if it so chooses, though—given that the DPRK nuclear program is already subject to important international monitoring after an important deal was struck in 1994—it is not clear what type of warhead the missile would deliver. Also less than clear are precisely what real advantages North Korea might gain from attaining such a capability.

After the fall of the USSR (which cost the DPRK its superpower patron) the country was hermetically sealed, isolated and in a state of permanent confrontation with South Korea, the US and much of the west. Kim Il-sung's regime had reason to fear that, thrown wholly onto its own resources, it might not survive. This has indeed turned out to be the case—the DPRK, due to a combination of natural factors and mismanagement, is unable to feed its population and has become dependent on outside assistance. If recent signs are any guide, Kim Jong-il has realised that changes are required, and that his regime may survive, with US acquiescence, if he modernises the economy and, above all, recasts some elements of his foreign policy.

Political developments already flowing from this change of posture may do more to neutralise the DPRK threat than NMD ever could. North Korea has begun to seek better

relations and dialogue with its region. It has joined the ASEAN Regional Forum, a broad-based informal multilateral consultative grouping on security issues, and has recently re-established diplomatic relations with Australia and the UK. Indeed, when the US State Department refers to the DPRK leader Kim Jong-il's 'practical statesmanship' with respect to the North-South summit in June 2000, one must wonder whether the Defense Department, which continues to argue that the DPRK is a 'state of concern' (the new designation for 'rogue' states) is fully seized of the implications of recent developments.⁸¹

Indeed, the recent visit to the White House of Vice Marshal Jo Myong Rok, first vice-chairman of the DPRK National Defence Commission and director of the general political department of the Korean People's Army, and the reciprocal visit of Secretary of State Albright to the DPRK, are further examples of this process at work, as is the hitherto astonishing suggestion that a US President might be received in Pyongyang. There is now a clear possibility—still by no means certain, but noted by President Clinton when he deferred the deployment decision—that the state at the top of the US NMD threat list can be neutralised through diplomacy.

This possibility can be explored with minimal risk. The DPRK has already announced (September 1999) a hold on further missile flight tests, and as tests cannot be concealed from US satellite sensors, any breach of the assurance is immediately verifiable. There appears to be no pressing case, so far as the DPRK threat is concerned, for an immediate American decision on NMD. In fact, such a decision would so obviously be rendered more likely by any resumption of DPRK tests that a decision to do so by Pyongyang would carry very heavy freight. Contrariwise, restraint from the DPRK would make it harder for US NMD advocates to carry their case.

What is clear is that as of the present time the DPRK has no credible ICBM capability. It would be able to develop such inside five years if so minded and assuming it can continue to command the necessary resources. It is also clear that any such ICBM will be both unreliable and inaccurate, meaning that for reliable delivery to an intercontinental target more than one missile will need to be launched. However, it is unclear what type of warhead might be used with a DPRK ICBM. Finally, the DPRK is undergoing significant shifts in policy at this time, and the possibility exists that its missile program may be negotiated away in the interests of improving Pyongyang's relations with the west. Certainly this would be a high priority objective of US negotiators in any future talks with the DPRK leadership.

Iran

If the DPRK missile threat to the US is potentially real but uncertain at this stage, the Iranian threat can only be described as problematical.

The US says about Iranian missile capabilities:

Most analysts believe that Iran, following the North Korean pattern, could test an ICBM capable of delivering a light payload to the United States in the next few years.⁸²

In the eighties Iran imported *Scud* missiles from both the former USSR and the DPRK. These saw operational use against cities and other large soft targets during the Iran-Iraq war. Iranian *Scud* developments, known as the *Shahab* series, reached the stage of *Shahab 4*, a drawing-board project which if successful would have a range of about 2000km (1080 nautical miles). Talk of *Shahab 5*, with a putative range of 3500–4000 km (1890–2160 nm), remains completely speculative at this stage.⁸³ Indeed, if Iranian statements that *Shahab 3* will be its last ballistic missile prove true—and testing cannot be concealed—then an Iranian ICBM will never see the light of day.⁸⁴ Indeed, the most recent Iranian test of *Shahab 3*, on 21 September 2000, was reportedly a failure.⁸⁵

Thus, the Iranian missile threat to the US appears remote. The most advanced Iranian ballistic missile concept, *Shahab 4*, has nowhere near the range and even *Shahab 5*, should it ever be seriously developed, would fall well short. It is difficult to see how Iran could pose a credible missile threat to the United States for some considerable time to come.

Moreover, as with the DPRK one should consider the situation of the Iranian regime. Iran appears to be torn by tensions between the traditionalist Shi'a Muslim forces which dominated the aftermath of the revolution and those of a more modern, if not actually secular, outlook, represented by President Khatami, who won a significant political victory in *Majlis* (parliamentary) elections held in 2000. Although the influence of the *mullahs* and fundamentalist Shi'a Islam are far from eliminated in today's Iran, the country appears to be moving slowly and cautiously away from religious fundamentalism. The lifting of the *fatwa* against Salman Rushdie in 1998 was an example of this moderating attitude. It was also noteworthy that this year's annual military parade in Teheran to commemorate the dead of the Iran-Iraq war did not feature any of the anti-US and anti-western banners and slogans which have characterised nearly all previous public ceremonies in Iran since the Islamic revolution.⁸⁶

While this process is far from complete, it does at least raise the possibility that before any of the Iranian *Scud* variants achieve a reliable intercontinental capability the political forces driving the anti-American component of Iranian policy may have declined significantly—in short, like the DPRK, Iran may end up in negotiation rather than confrontation with the west. Though this is far from certain, what is clear is that US claims notwithstanding the present and probable Iranian missile program is unlikely to produce an ICBM capable of reliably delivering a weapons payload to US continental territory anytime in the foreseeable future.

Iraq

North Korea may be a potential threat, and Iran problematical, but it is difficult in the extreme to see how Iraq, which is the third state on the US threat list, can develop an ICBM at all. The US position on Iraq—as stated by the CIA—was quoted earlier:

Given that Iraqi missile development efforts are continuing, we think that it too could develop an ICBM—especially with foreign assistance—sometime in the next decade.⁸⁷

Clearly the US itself is uncertain about Iraq's ability to run a missile development program. The regime's record and its resistance to the post Gulf War UN inspections regime undoubtedly encourage suspicions that it will do whatever it can to rebuild its missile, chemical, biological and nuclear infrastructures. And the regime has plenty of motivation to wish the US and the west ill. It is reasonable, therefore, to assume that if Iraq *could* develop an ICBM capable of striking the US, it would do so.

At the same time, Iraq was wellnigh destroyed in the Gulf War (which, it should be noted, followed the terrible Iran-Iraq war after only a couple of years) and the country's infrastructure was seriously damaged. The ongoing application of international sanctions has kept the Iraqi economy depressed and significantly limited the ability of Saddam Hussein's regime to support the reconstruction of its lost military power. While it is not inconceivable that Iraq could seek to develop an ICBM from whatever remains of its *Scud* stocks, the US judgement that it would probably need external support is certainly correct, especially if the UN sanctions regime remains in place—and its removal depends on US consent at the Security Council. Of course, should Iraq begin active missile development again, any testing would immediately betray its activities to the United States.

The only possible sources of support for an Iraqi ICBM project are North Korea, China and the Russian Federation (it is assumed on the basis of their past history that Iran would not wish to assist Iraq in this way, or indeed *vice-versa*). If the DPRK continues along its moderating course, it is probable that it will commit at some point if not to ending its missile program, then at least to a cessation of support for other states' missile development. What the Russian Federation or China could hope to gain from assisting the Iraqi regime to create an ICBM capability against the US is not immediately clear. The Bagdad regime is clearly a regional loose cannon and helping it acquire the capability to deliver weapons of mass destruction to the continental US is not going improve relations between Washington and either Moscow or Beijing, neither of which wishes NMD to proceed. The likelihood of the US attempting to deploy an NMD system is largely dependent on NMD proponents being able to convince Congress and the people that there is a real threat. If Iraq is ever to pose a credible threat in this context it will be because it received external assistance. Thus, for Russia or China to assist Iraq would actually make a US NMD deployment more likely.

Neglecting Deterrence

A significant gap apparent in many of the arguments advanced by the US to support NMD is the almost complete absence of discussion on the value of traditional military deterrence in protecting the country from ballistic missile attack. It is plain fact that the United States is capable of military responses against any of the putative threatening states beginning at minor air raids and military harassment and going all the way up to nuclear obliteration. Any state contemplating an attack on the US must take into consideration the risks involved in provoking the world's greatest military power. In 1990–91 the US committed almost 400 000 of its own personnel to defeat the Iraqi invasion of Kuwait and secure the west's oil supplies.⁸⁸ This was done not to protect the US itself but one of its important external interests. Who can say what the US would do if Iraq, or any other similar state, were to destroy one of its cities with a nuclear armed missile? After such an attack the mood in the United States would be very hostile—perhaps reminiscent of that which prevailed after 7 December 1941, when 'remember Pearl Harbor' became an American mantra.

It is of course sheer speculation to ask what a nuclear-armed US might have done to Japan in 1941, but it is a matter of historical fact that as soon as the US had nuclear weapons it immediately used two of them against Japan. Any state attacking the US today risks terrible retaliation. Indeed, the US response might be very swift, based on shock, grief over huge losses and outrage directed at the attacker. (The lightning fast nature of American command, control and communications systems makes an immediate, emotionally-driven, response a distinct possibility.) The threat of heavy retaliation is the essence of military deterrence, and in this situation it would seem to apply. One is therefore bound to ask: given that the site of an ICBM launch cannot be concealed, who would dare attack the US in this way? NMD seeks to do via a costly, complex and problematic defensive system what the overwhelming military power of the United States already does by basic deterrence.

The Threat in Reality

The US identifies North Korea, Iran and Iraq as the principal sources of threat justifying its NMD program. To do so, however, it had to move the threat definition goalposts to make threats easier to find. Yet closer analysis suggests that none of these states are by any means certain to pose the threats claimed by the United States Defense Department:

- The DPRK has the most advanced program of the three states mentioned. However, the North Koreans are, tentatively and cautiously, recasting their policies. If continued, this trend will very likely mean the neutralisation of any DPRK missile threat without the need to deploy NMD. Contrariwise, provocative actions by Pyongyang will only add grist to the mills of NMD proponents, something of which Kim Jong-il's regime, not to mention its traditional friends in Moscow and Beijing, must be aware.

- Iran, US claims to the contrary notwithstanding, appears to be many years away from any ICBM capability. Its most recent *Shahab 3* test failed. Moreover, like the DPRK, Iran appears to be moderating its more extreme policies. The caveats on Iran as a potential ICBM threat to the US are, firstly, that its missile program is not sufficiently advanced and, second, that moderating policies may allow Teheran to de-emphasise the program—or at least reduce its long range component—so that even the long term prospect of an Iranian ICBM evaporates.
- It is difficult to see what besides motivation and prior experience qualifies Iraq for the US NMD threat list. Iraq suffered devastating setbacks during the Gulf War and its aftermath, and nearly ten years later the country still labours under severe international sanctions which limit its access to goods, services and foreign exchange. It is hard to see any substance in the claimed Iraqi ICBM threat—even the US could say no more than 'we think that it too could develop an ICBM—especially with foreign assistance—sometime in the next decade.'⁸⁹

In short, then, the US claims of a significant threat are highly questionable. In the words of Ehsan Ahrari, Professor of National Security and Strategy at the Joint and Combined Warfighting School of the US Armed Forces Staff College, 'developing national missile defense ... against so-called rogue states conjures up cliches like 'using a bazooka to swat flies'''.⁹⁰

Yet it is in these three states, plus the remote chance of a limited accidental or unauthorised launch from one of the established nuclear powers, that the United States sees the threat which justifies its huge investment in NMD. In 1999 the Welch Panel, set up by the Secretary of Defense to review NMD, noted that NMD is unique in that 'national leaders have made a conscious decision that the significance of the potential threat to the security of the United States warrants pursuing the program on a high-risk schedule'.⁹¹ Thus the claimed level of threat is not just being used to produce political justifications for NMD but, most significantly, has driven the program into an acknowledged high-risk configuration.

Since the start of SDI, investment has totalled upwards of US\$50 billion; since the abandonment of SDI's grandiose targets and the substitution of GPALS (200 hostile warheads) and then NMD (20–25 warheads), US\$30 billion has been outlaid. Relative to the identified threats, this is apparently a classic case of disproportionate response: \$US30 billion has been consumed by a strategic ballistic missile defence effort directed against a few warheads from dubious sources which may in any case be manageable via diplomatic means. In one sense this represents a major strategic victory for the three allegedly 'threatening' powers (and for other enemies of the US)—Washington has spent these funds, which might otherwise have gone into real deployable military capabilities, on a program which seeks to defend against what is already deterred and which in any event has as yet produced nothing.

It is to the prospects for a successful NMD system that we now turn.

Can NMD Protect the US from WMD Attack?

The general nature of the technological challenge facing NMD proponents was discussed in earlier sections of this paper. In essence functional NMD requires the reliable detection, identification, acquisition, tracking and finally destruction of quite small objects which after launch travel at velocities measured in kilometres or miles per second. Moreover, it is possible that several of the objects thus tracked will be dummies or decoys.

The US itself appears under few illusions as to the nature of the task it has set itself. The information Washington allegedly supplied to Russia earlier this year (already quoted) included the assessment that 'in the best case' 100 GBIs could destroy 20–25 warheads equipped with 'comparatively primitive' penetration aids, and that 200 GBIs could destroy 40–50 warheads.⁹² Thus it appears that the system overall is reckoned to have a single-shot kill probability of 0.25—that is, in the best case it takes 4 interceptors to reliably destroy one target. Although the US uses worst-case scenarios in its NMD threat analysis, it does not appear to have provided a worst-case scenario for GBI performance. But at best, then, the warhead-to-target ratio needs to be 4 to 1 for reliable destruction and may well be worse than that in some cases. It is no wonder that some US Republican Senators have argued that more than the one NMD site will be required to mount a credible defence.⁹³

Requirement for Near-Perfect Performance

The difficulty the US imposes on itself is the need for almost one hundred percent performance. Even one warhead penetrating the NMD defence and reaching its target could result in the loss of a city (the extent of loss depending on the nature of the warhead)—that would mean that the huge investment in NMD had failed. Therefore the US has had to accept the challenge of designing a defence which, against the warhead numbers generated by its threat assessment, is foolproof. It must, moreover, persuade the people, the Congress and allies that the proposed defence will be impermeable. After all, only one mistake or failure is needed to cost the US a city. The requirement for perfection is technologically very exacting, and likely to be extremely expensive.

Indeed, ordinary realism suggests that developing a system which is expected to perform perfectly every time at the potential cost of millions of lives per failure is going to be impossible. No matter how much care and expense are lavished on every aspect of the system, in a project as complex and demanding as NMD it seems quite unreasonable to expect a zero net failure rate. The idea is actually reminiscent of constructing an 'impregnable' fortress, or perhaps an 'unsinkable' ocean liner. Yet anything less than this level of performance is clearly unacceptable in terms of the threat as presented.

Certainly the results of NMD testing thus far do not inspire confidence in a zero net failure deployable system. When he announced that he would not be authorising NMD deployment at this time, one reason cited by President Clinton was the equivocal message of the NMD testing program to date:

... though the technology for NMD is promising, the system as a whole is not yet proven. After the initial test succeeded, our two most recent tests failed, for different reasons, to achieve an intercept. Several more tests are planned. They will tell us whether NMD can work reliably under realistic conditions. Critical elements of the program, such as the booster rocket, have yet to be tested. There are also questions to be resolved about the ability of the system to deal with countermeasures.⁹⁴

Given the daunting technical challenges a credible NMD must meet, this assessment is not at all surprising. In fact, the only surprising thing in any of this is that the US would consider for a moment making a deployment decision with the program at so early a stage—with interceptor boosters, for instance, as yet totally untested. In terms of major military project management this is an approach which breaks all the rules and is indeed 'high risk', as the 1999 Welch Panel (which supports NMD) observed.

Even though it supports NMD, the Welch Panel was refreshingly candid as to the technological challenge involved. It concluded:

It will take strong program management and top-level support to ensure that the performance requirements and basic system engineering and design functions are not sacrificed to the calendar, since no decision will produce successful deployment until the system can be shown to perform as required.⁹⁵

This is a pointed warning, especially coming from this source. It rings particularly true for anyone acquainted with the Australian Navy's *Collins* submarine project, where an early decision to develop *ab initio* an unproven high-technology combat system has resulted in major cost overruns and delays, and where the unproven technology has had to be discarded at major expense after years of effort to 'get it right' proved fruitless.⁹⁶

In deferring the NMD deployment decision President Clinton referred to the need for more testing to validate the performance of the system, or in some cases, to actually test components (e.g. the interceptor booster) for the first time. The President was undoubtedly correct to do so, but it needs to be borne in mind that even fully successful testing does not guarantee an acceptable level of operational performance. The *Patriot* system used in the Gulf War against Iraq's *Scud* attacks had (unlike NMD) never failed a test. These tests were, however, against targets that flew on stable ballistic trajectories and it was found that the Iraqi missiles tended to wobble and follow uneven paths. The effect of this was to degrade *Patriot* performance in the field, something unanticipated during the test program.⁹⁷ Thus, even if NMD eventually passes all necessary tests, this will not guarantee the near flawless in-service performance that a successful defence of this type requires.

NMD as a Modern Maginot Line: Covert Delivery and 'FOBS'

One aspect of the threat posed to the United States by weapons of mass destruction is curiously understated in official US threat analysis. This is the threat posed by WMD delivered not by ballistic missiles but by covert means using ordinary civilian transport.

Such means were not really useful to the Cold War superpowers, and the modern US does not require them. But for lesser states or non-state actors (e.g. terrorist groups) they offer a cheap, low-risk and low-visibility means of getting one or two WMD onto US territory—even into one or more of the great American cities.

The ballistic missile is costly, takes many years to develop to the point where it is reliable and requires significant support infrastructure. Nor can such developments be concealed from the United States' sophisticated global surveillance network. Yet missiles have no particular merits as a delivery system for a few WMD. True, they are fast—perhaps 30 minutes from launch to impact—but whatever a missile's fate in the face of a deployed NMD, its origin point will be glaringly obvious. As already discussed, attacking the US with a ballistic missile risks national disaster.

If one wishes to deliver only one or two WMD, then covert means offer advantages. A nuclear weapon, for instance, can be concealed in a ship's cargo, sailed into New York harbour and detonated. The casualties and damage would be enormous. Yet such an attack can be prepared at leisure and delivered at worst on a few weeks notice. Moreover, the origin may not be readily apparent.

In one sense the lack of emphasis on this means of WMD delivery in the US documents is understandable, because no real defence can be devised against such an attack without massive and permanent disruptions to trade. Though the threat exists, there is little the US can do about it; this being so, equally there is little to be gained by publicising it.

However, there is also little to be gained for the NMD cause. Indeed, the existence of the covert delivery option arguably threatens to turn NMD, however successful it may prove, into a latter day version of the Maginot line. This defensive barrier was constructed in the thirties by the French against Nazi German attack, but when the attack came it simply bypassed the prepared line, which actually was never breached. The result was the swift and comprehensive defeat of France. NMD could fulfil an analogous role—in place, and (we shall assume) capable of performing its mission but simply not called upon to do so when a covertly pre-positioned WMD detonates in a US city. In such a case, as with the Maginot line, the resources lavished on NMD will simply have been wasted.

There is also the possibility that an attacker who does use ballistic missiles might employ so-called 'Fractional Orbital Bombardment Systems' (FOBS) to literally get behind any NMD defence. Missiles can be launched on a long trajectory that results in their approaching the US from the south, instead of the north where a deployed NMD will be positioned. NMD would be of little value against such an attack. However, FOBS requires the

capability to place missile payloads into orbit and then to de-orbit them at precisely the right time to bring them down on the target. With the technology levels available to the likely 'threatening' powers, FOBS is probably beyond their capabilities, though if one applied criteria similar to those used by the US in its threat assessment a different conclusion might be reached.

NMD is Destabilising

If there was any single major benefit arising from the end of the Cold War, it has to be the removal of the threat of global nuclear war. But of course this development has by no means removed the threat of nuclear weapons, let alone other possible weapons of mass destruction. Indeed, it is arguable that in the post Cold War world the risk that nuclear weapons will be used has actually increased, though the scale of such use has (happily) shrunk dramatically from global war to the use of one or two weapons, either by 'rogue' states or by nuclear states like India and Pakistan, locked in decades-old disputes. But the danger that the US and what is now Russia would destroy hundreds of millions of people and possibly bring on a 'nuclear winter' has passed.

In today's world the US is the predominant strategic power. The Russian Federation retains a substantial nuclear arsenal, though there are concerns that its command-and-control and other supporting infrastructure has been seriously degraded by shortage of resources over the last decade.⁹⁸ But the relative importance of lesser nuclear powers such as China has undoubtedly increased.

Neither Russia nor China support NMD and can be relied upon to do what they can to prevent its deployment. But they recognise that this may not be possible, and are therefore saying that if NMD goes ahead (which would also spell the end of the ABM Treaty as now understood) they will have no option but to upgrade their strategic nuclear forces. For China in particular this is necessary, because its present nuclear force is both small and, in terms of delivery systems, basic. This makes it potentially vulnerable to a US NMD, because it is clear that if NMD works at all, it will be most effective against the least sophisticated delivery systems. But, in view of the well-known decline of the military since the fall of the USSR, even Moscow may feel that it needs at least a fully modernised front-line ICBM and warhead re-entry system to maintain its strategic position vis-à-vis the United States.

Thus it is likely that Beijing will move to expand and upgrade the effectiveness of its nuclear delivery systems should the US deploy NMD. Unfortunately it is not only the US that takes careful note of Chinese nuclear and missile developments. India in particular is highly sensitive to such and it is generally agreed that an underlying motive for India's move to overt nuclear weapons status in 1998 was concern about China.⁹⁹ (India has a clear conventional military advantage over China's friend Pakistan, which is now in a nuclear standoff with India, but the Indians fear Chinese intervention in support of Pakistan). Thus a Chinese nuclear upgrade is likely to draw some response from Delhi,

and that in turn will not go unnoticed in Pakistan. NMD deployment could therefore act as a stimulus for a new round of missile upgrades and improvements to deployed nuclear systems. In short, it could trigger a latter-day nuclear arms race in a world which would also be without the stabilising effects of the ABM Treaty.

These are typical 'knock-on' effects seen when competing adversaries are unwilling to allow others to gain some (real or imagined) advantage, and bear some similarities to the semi-automatic sequence of events which brought on the First World War. This is not to imply that NMD could start another global war, but it could stimulate nuclear weapons and missile upgrades which do nothing to assist overall stability and which would otherwise not occur at all, or be more modest and conducted at a less disturbing pace.

In some circumstances this might be an acceptable risk to run if the benefits of so doing were sufficiently substantial. But cost-benefit analysis suggests that in this case they are not. Even fully successful NMD deployment against the claimed 'state of concern' threat would not, as has been shown above, free the US from the threat of attack with WMD, but would nevertheless run the risk of touching off a cascading nuclear arms race which could draw in China, Pakistan and India as well as Russia. And of course should other states seek to upgrade their nuclear capabilities it would not be too long before elements in the US began demanding improvements either to NMD or to US strategic delivery systems (or perhaps both) to counter the upgrades of other states. Again one recalls the statement from 25 US Republican Senators, that present plans for NMD deployment are inadequate and that more will be needed.¹⁰⁰

None of these putative developments are certain, but there is a relentless logic in arguments concerning the working of arms races, especially those triggered as unintended or secondary consequences of other decisions. There is a grave risk that, attempting to protect itself against limited attacks by missile-delivered WMD, the US may inadvertently make the early twenty first century a period of increased nuclear danger only a decade or so after the world escaped the threat of global war.

A 'Nice Little Earner'

From the beginnings of SDI the entire concept of defence against ballistic missile attack has been controversial. In the US, opinion is polarised more or less along traditional 'hawk versus dove' lines, with most of the Republican Party strongly supportive and the Democrats much less so—though as is always the case in America, support and opposition crosses party divides.

However, the Republican administrations of Ronald Reagan and the elder George Bush committed themselves so strongly to SDI and its successor that they invested substantial political capital, as well as tens of billions of dollars, in the concept. To walk away, admitting that the system is either unnecessary or impossible, would now be a humiliating backdown for the Republican Party. Because that Party has controlled Congress since

1995 (even though the Democrats held the White House since 1993) it was able to force a reluctant Clinton Administration to continue the missile defence effort, albeit in its greatly scaled-down NMD format. Thus a key driver of NMD in the US today is the need of its political supporters to defend their credibility.

Though the objectives have been scaled down, the table on page 3 above shows that budgets continue to be substantial. About US\$50 billion has been spent on SDI-GPALS-NMD. This much money, farmed out to defence contractors and research institutions since the mid-eighties, has created an NMD constituency in its own right. Legislators whose states or Congressional districts have benefited from missile defence spending are naturally inclined to support the concept on its political and economic merits, regardless of whether it is actually feasible or even desirable. Likewise, important elements of the US military have found gainful employment, substantial budgets and all that goes with them in the NMD effort. Numerous companies have secured NMD-related contracts with the prospect of more to come *if* the project proceeds to deployment. Thus, in traditional 'military-industrial complex' behaviour, NMD now has political, military and industrial constituencies prepared to support the program out of what amounts to little more than self-interest.

It is these factors—political credibility for its supporters and the economic-political imperatives generated by the huge sums already pumped into missile defence—which really drive US NMD proponents today. The manipulation of criteria to produce a believable threat is the work of those who seek to protect the project not because it is necessary but because it is, politically and economically, in the vernacular 'a nice little earner'. This it may be, but the evidence also suggests that, in another popular phrase, NMD deployment would be 'throwing good money after bad'.

Issues for Australia

A divide over NMD similar to that in the US may be emerging in Australia. As will be discussed below, there are signs that the Government is positioning itself to embrace NMD if requested by the US. The Opposition, however, has declared against the concept. Its official policy, as recorded in the 2000 ALP Platform, calls on the US 'to suspend further moves towards the deployment of NMD' and commits a future Labor government to 'review any Australian involvement in NMD through the Pine Gap [facility] ... or other arrangements ... Australia should not support or be involved in NMD research, development or trials.'¹⁰¹

Should Australia Participate?

Australia has not yet been formally asked to participate with the US on NMD but if it is, it will have to weigh up the value it places on its alliance relationship with the US and the importance of maintaining the US role as the guarantor of world peace.

Cooperation with the US will be important for maintaining Australia's credibility as a close and supportive alliance partner of the US. There may also be important technology spin-offs. Australia's Defence Science and Technology Organisation and the US Defence Department's Ballistic Missile Defense Organisation have been conducting joint research on the detection of ballistic missiles since 1997. Australia benefits by keeping abreast of advanced military technologies involved in early warning, space tracking, high speed computers and satellite communications.

If the US does go ahead with NMD and asks for Australian support, for example, through the contribution to be made by the US facilities at Pine Gap, Australia will need to consider where its best interests lie. In realist terms, given the widespread view that the Asia-Pacific region is beset by fluidity, instability and insecurity, Australia should not refuse to cooperate with the US and nor should it stand alongside countries like Russia and China in opposition to NMD.

The US might overlook Australia's non-participation in NMD and yet continue to value and uphold the alliance relationship, as it did, apparently, when the SDI project was under consideration in the 1980s. But SDI was a project under consideration at the height of the Cold War when the technology needed to shoot down missiles appeared to be unavailable. In the current strategic and technological environment, the US might perceive Australia's non-participation as evidence of a wavering ally that is realigning its interests with those of the strongest opponent of NMD in the Asia-Pacific region, namely, China. In any event, if all of America's allies in the Pacific choose to opt out of NMD, this might cumulatively contribute to a general US unwillingness to show leadership and resolve as the chief arbiter of peace and stability in the Asia-Pacific region.

Strategically, Australia's national interest are best served by supporting a close ally that happens to also be the world's leading democracy, market economy and superpower. Australia has good relations with China and, given the latter's concerns about America as a superpower intent on achieving absolute dominance, it would be pleased if Australia publicly voiced doubts about the wisdom of NMD. But Australia has a critically important alliance relationship with the US. It shares the same democratic values as the US. It has a vested interest in the US being able and willing to continue playing a leadership role as guarantor of peace and stability, both regionally and globally. It is not in Australia's interests to have the US hesitate or reluctant to support allies in the Western Pacific, or elsewhere, because it feels deterred by the threat of a missile attack.

Why Australia Should Not Participate

Relations with the United States

It has already been noted that the US has had difficulty in enlisting the support of allies for its NMD effort; the major NATO allies in particular are deeply sceptical. The negative

report from a UK Parliamentary committee has already been noted, but other US allies are equally unenthusiastic.¹⁰² Earlier this year French President Chirac described NMD as of 'a nature to retrigger a proliferation of weapons, notably nuclear missiles. Everything that goes in the direction of proliferation is a bad direction', while Canada's Foreign Minister said 'there are so many other ways we could be pursuing stability. We have expressed very strong concerns that any movement of the national missile defense that abrogates the ABM Treaty would be wrong. We don't like anything that would further expand acceleration of missile capacity'.¹⁰³

Naturally Washington would like support—both political and practical—from Australia for NMD, just as in the eighties the Reagan Administration sought Australian support for SDI. Is there any reason to believe that an Australian negative on NMD would attract an adverse American response, beyond a *pro-forma* expression of regret or disappointment?

If the history of SDI is any guide, the answer is no. Despite its inability to persuade Australia to join the SDI project, Australia–US relations under the Hawke and Keating Governments remained cordial, as between allies. Later, Australia did join the US-led military coalition against Iraq and was most welcome. It is unlikely that the US would wish to damage its relations with allies over this issue.

There is, however, one indication to the contrary. This comes not directly from the US Government, but from Australia's own Foreign Minister, Mr Alexander Downer. In a speech in Perth on 9 August 2000, the Minister attacked the Opposition's policy, saying: 'I can't for the life of me believe that the US would keep Pine Gap going and maintain ANZUS if this [Opposition policy] were Australia's policy'.¹⁰⁴

This is a startling assertion. It runs counter to the Reagan–US reaction to Australia's refusal to support SDI, and thus far at least to the US reaction to other allies that have backed away from NMD. It is in fact difficult to avoid the conclusion that this statement is more rhetorical than substantial. The US has not itself made any public statement on this aspect of NMD.

Relations with China

Australia's relations with China have sometimes come under stress because of the conflicting demands of its American alliance. Little more than four years ago, Beijing described Australia as one 'pincer' (Japan being the other) of a pro-US 'crab' aimed at China.¹⁰⁵

Chinese opposition to NMD is based primarily on simple self-interest. As China's conventional military forces, though large, have only regional reach and are no match for those of the US and other western powers, China really depends on its nuclear forces to give it a claim to global military strategic significance. It has already been noted that if, contrary to some expectations, NMD works it will undoubtedly be most effective against

relatively unsophisticated delivery systems. However, 'unsophisticated' is an excellent description of China's strategic nuclear forces, and so Beijing is concerned that NMD may degrade their credibility vis-à-vis the US.¹⁰⁶ Its recently released defence White Paper referred to NMD as a 'negative development' undermining 'the international community's efforts to stem the proliferation of weapons of mass destruction and to promote disarmament.'¹⁰⁷

An American decision to deploy NMD may force Australia to choose between its regional interests, which benefit from good relations with Beijing, and its traditional relationship with the United States. If Australia supports NMD, it hard to predict how relations with China could escape some damage.

Costs and Benefits

There is much about NMD that is still uncertain. Especially so is the place of US allies. Would they be expected to share in the development and deployment costs? What would be the command-and-control arrangements for the defence of allies? Will allies be protected by US NMD capabilities? *Can* they be protected? In particular, does Australia require protection, and if so can the NMD shield cover us?

As NMD is presently proposed for deployment, the answer to the last question is certainly negative. In terms of practical on-the-ground assistance, Australia already does more, through its hosting of a ground station for the US early-warning satellite net, to protect the US from nuclear attack than the US does for Australia. This however is no criticism of Washington, because Australia really does not require protection from ballistic missile attack. Only the US, Russia, Britain, France and China have nuclear-armed missiles capable of attacking targets on the Australian continent. In the Cold War, some facilities in Australia were undoubtedly targeted by Soviet missiles, but since then there has been no credible threat.

There are other potential costs as well. Possible dollar costs can only be flagged here, because no one has any idea of what terms the US might propose for participation. But there are also less quantifiable costs. Australia has good standing as a leader in arms control and disarmament—a position it has held at least since the active sponsorship of the discussions which led to the conclusion of the Chemical Weapons Convention, and reinforced when (parting company with the US) it signed the recent agreement banning landmines as inhumane weapons. But if Washington is unable to obtain Russian consent for amendments to the ABM Treaty, it will have to withdraw unilaterally, thus abrogating an arms-control arrangement that has stood for almost thirty years as a pillar of stability. Australian support for NMD would then require Canberra to support the unilateral American action, significantly damaging that hard-won standing.

Regionally, there are probably a number of states which would seize the opportunity presented by our compliance with US wishes on NMD to add more weight to the claim

that Australia, for all its claims of 'regional involvement' and of really being part of the region in more than a geographical sense, too often acts as a surrogate for Washington. Canberra's credibility as an independent regional actor would be damaged.

The status of the US ground station recently moved from Nurrungar to Pine Gap is established by a separate classified agreement between the US Air Force and the Australian Defence Department. This station presently manages DSP satellites; if SBIRS goes ahead, it will in time manage SBIRS satellites. The Australian Government says that the DSP facility at Pine Gap is fully automated, but that it can only be used for purposes previously agreed by the two governments.¹⁰⁸ It remains to be seen whether Australia will consent to the use of the facility to support NMD tests and, later, possible deployment.

Finally, it is relevant to record a recent report that, despite cautious comments from the Minister for Defence (Mr Moore), who has said only that a proposition from the US government would be considered when received, Australia has already secretly budgeted to support a ground station for SBIRS, the new US infrared detection satellites planned to form part of NMD.¹⁰⁹ Ironically, there have been later reports that the US itself is reconsidering its commitment to SBIRS: the US Air Force Secretary, Whitten Peters, was reported as questioning the cost and saying that SBIRS 'is under review again'.¹¹⁰

Conclusions

Perhaps the most striking thing about the American pursuit of technologies to defeat ballistic missile attack has been its single-mindedness. Notwithstanding dramatic political and strategic change since President Reagan first announced his Strategic Defense Initiative in 1983, and despite numerous technological failures and setbacks, the United States continues to pursue a technology-based solution to the problem of ballistic missile attack.

The objectives being sought, however, have contracted dramatically. President Reagan told the world that SDI would render nuclear weapons 'impotent and obsolete', announcing a system designed to make it impossible for the then USSR to wipe out the US even if Moscow employed its full nuclear arsenal. This objective proved to be a science-fictional chimera—today the United States will be happy if it can deploy a system, NMD, which would reliably intercept 25 or less missiles, and even this radically slashed objective is proving exceptionally difficult to achieve.

It has been suggested in the section of this paper giving arguments against NMD that the US has (not for the first time) actually been 'talking up' possible threats in order to justify its ongoing interest in NMD. Certainly there seem to be signs of moderating tendencies in both North Korea and Iran, states high on the US ballistic missile threat list, and both have announced halts to long-range missile development. Be that as it may, it is certainly true (as even official supporters of the program acknowledge) that the US has allowed its threat perceptions to drive the NMD project into a high-risk configuration. This has involved preparing for early deployment at a time when few of the scheduled tests have been

conducted (and not all of those successfully), and when some key components have not been tested at all. This is an approach which violates many basic precepts of major military project management and which certainly increases the risk of delay, cost blowouts and even failure.

There are questions as to whether or not the United States will be able to deploy an NMD system which can protect it from attack by weapons of mass destruction. There is the issue of the NMD technology itself and the fact that NMD does nothing to protect the US from WMD delivered by means other than a ballistic missile—in particular, covert means that simply bypass the whole NMD complex and, moreover, offer would-be attackers other advantages.

The need to modify, if not cancel, the 1972 ABM Treaty highlights NMD's impact on arms control issues. There is a risk, albeit not universally accepted, that in seeking protection against ballistic missile attack the US might inadvertently set off an unwelcome sequence of nuclear weapons upgrades in states like Russia, China, India and Pakistan.

The role of US allies in NMD remains unclear, but certainly the US would like to enlist as many as it can in at least nominal, and in some cases practical, support. At the same time, it appears unlikely that should an ally such as Australia decline to support NMD the US would be more than conventionally disappointed, as it was when Australia previously declined to support President Reagan's SDI.

If the US goes ahead with NMD, Australia may find itself caught between, on the one hand, its commitment and obligations to the US as guarantor of Australia's security and Australia's strategic interests in the Asia-Pacific region, and indeed globally, and on the other hand, Australia's budding new friendship with China and its interest in the ABM Treaty's contribution to global strategic stability.

It is sensible for Australia to consider the problems associated with NMD and the possibly negative strategic consequences. At the same time however, Australia should not rush to judgement and overlook its alliance obligations and the potential benefits of a system that, in the absence of a better alternative, might help preserve America's global economic and political dominance and its self-confidence as the world's leading democratic power. It is premature at this stage to come out in opposition to NMD as technologically unworkable and strategically unsound—no decision has been formally made by the US; Australia has not been asked to participate; the US may yet be able to persuade Russia to modify the ABM Treaty and meanwhile re-assure China of the limits of NMD, and, arguably, the technology does have promise, especially if more time is allowed for research and development. Australia should at least keep its options open.¹¹¹

Endnotes

1. In July 2000 the UK House of Commons Defence Select Committee recommended that the British Government 'encourage the USA to seek other ways of reducing the threats its perceives.' *Eighth Report: Session 1999–2000*, para. 50.
2. These signals are firstly, the remarks of Foreign Minister Downer on 9 August 2000 (discussed later in this paper) and, secondly, a report that Australia has secretly budgeted funds to provide ground support for new US space-based infrared sensors. P. LaFranchi, 'Australia approves cash for spy satellite ground link', *Flight International*, 22–28 August 2000, p. 23.
3. *Remarks by the President on National Missile Defense*, Gaston Hall, Georgetown University, Washington DC, 1 September 2000. From the White House website: <http://www.pub.whitehouse.gov/uri-res/12R?urn:pdi://oma.eop.gov.us/2000/9/1/9.text.1>.
4. The ABM Treaty did permit each side to deploy two ABM systems—one to defend the national capital, another to defend a single missile field. Later amendments reduced this to one system each, but in fact the US mothballed its deployed system in 1976, though the USSR deployed a system around Moscow. The other key element was the first Strategic Arms Limitation Treaty (SALT I), signed at the same time as ABM Treaty.
5. Except for year 2000, the source of this data is *Fact Sheet PO-99-02*, issued by the US Ballistic Missile Defense Office in April 1999, accessible at: <http://www.acq.osd.mil/bmdo/bmdolink/pdf/po9902.pdf> (Note that if access to this site proves difficult or slow, faster access for DPL clients may be possible at : <http://DPL/Books/2000/USBMDO/www.acq.osd.mil/bmdo/bmdolink/pdf/po9902.pdf>). Year 2000 funding is from http://www.dtic.mil/comptroller/fy2000budget/budget_justification/pdfs/rdtande/fy00pb_bmdo.pdf
6. US Department of Defense, *Annual Report to the President and the Congress 1999*, p. 74.
7. The test records of *Patriot*, compared with its in-service performance, however, may offer some lessons. This one aspect will be addressed again later in this paper.
8. Statement by CIA Director, George C. Tenet, before the US Senate Select Committee on Intelligence, 2 February 2000. From http://www.cia.gov/cia/public_affairs/speeches/dci_speech_020200.html
9. Wade Boese, 'GOP Says Limited NMD Plans Are Not Enough', *Arms Control Today*, May 2000, p. 41.
10. A. Legault and G. Lindsay, *The Dynamics of the Nuclear Balance*, 2nd edition 1976, p. 48.
11. For this reason there are proposals in the area of theatre missile defence (against short and medium range missiles like the various *Scud* derivatives) for ABM systems to be mounted on warships or even aircraft which could be deployed to areas known to have hostile launch sites and attack these missiles in boost phase. These proposals are still in dispute. Charles V. Pena, 'From the Sea: National Missile Defense is Neither Cheap Nor Easy', CATO Institute *Foreign Policy Briefing no. 60*, 6 September 2000.

12. Information for this outline is principally from Marvin Leibstone and Ezio Bonsignore, 'US and Ballistic Missile Defence: NMD Decision Looming', *Military Technology*, 3/2000, p. 26.
13. 'Russia's Concerns' in 'US Draft Protocol to the ABM Treaty and Associated "Talking Points"', *Arms Control Today*, May 2000, p. 23. The US has neither confirmed nor denied the authenticity of this document.
14. *Statement of Lieutenant General Ronald T. Kadish*, USAF, Director, Ballistic Missile Defense Organization before the House Subcommittee on National Security, Veterans Affairs, and International Relations Committee on Government Reform 8 September, 2000. From: <http://www.acq.osd.mil/bmdo/bmdolink/html/kadish8sep00.html>. (Note that if access to this site proves difficult or slow, faster access for DPL clients may be possible at: <http://DPL/Books/2000/USBMDO/www.acq.osd.mil/bmdo/bmdolink/html/kadish8sep00.html>).
15. 'US Draft Protocol to the ABM Treaty and Associated "Talking Points"', *Arms Control Today*, May 2000, p. 23. 'Unilateral Statement', p. 19.
16. Article XV of the ABM Treaty provides that it is of 'unlimited duration' but allows either party to give six months notice of withdrawal 'if it decides that extraordinary events related to the subject matter of this Treaty have jeopardized its supreme interests'.
17. See *The Congressional Quarterly Researcher*, 8 September 2000, vol 10, no. 30, p. 689.
18. In 1995, Russia's early warning system mistook a civilian experimental rocket launched from Norway for an attacking Trident missile from the US. Reportedly, the order to retaliate went all the way up the chain of command to Boris Yeltsin who cancelled the order. See *The Congressional Quarterly Researcher*, 8 September 2000, vol 10, no. 30, p. 689; and for a report of an earlier near incident see Gregory Copley, 'Putting 21 century ABM needs into context', *Defence & Foreign Affairs Strategic Policy*, June-July 2000, p. 9.
19. US Secretary of State William S. Cohen, quoted in Mary H. Cooper, 'Missile Defence', *The Congressional Quarterly Researcher*, vol 10, no. 30, p. 691.
20. Remarks by Secretary of Defence William S. Cohen, Center for Strategic and International Studies, Washington DC, 2 October 2000, USIA Washington File EPF301, 4 October 2000.
21. US Secretary of State William S. Cohen, quoted in Mary H. Cooper, 'Missile Defence', *The Congressional Quarterly Researcher*, volume 10, number 30, p. 691.
22. 'Cohen on NMD before Senate Armed Services Committee', USIA Washington File, EPF206, 25 July 2000.
23. *ibid*
24. Statement of William S. Cohen, Secretary of Defense, before the Senate Armed Services Committee, Hearings on National Missiles Defences, Washington, 25 July 2000. Talks between the US and North Korea in Kuala Lumpur were substantive but were broken off on 3 November 2000 with no significant agreement to curb Pyongyang's missile development according to US Assistant Secretary of State for Nonproliferation, Robert Einhorn: 'North Korea, US Break Off Missile Talks', *Defense News*, 13 November 2000, p. 2.

25. Stephen A. Cambone, Director of Research, Institute for National Defence Studies, National Defence University, Statement, <http://www.fas.org/spp/starwars/congress/2000>
26. Statement of William S. Cohen, Secretary of Defense, before the Senate Armed Services Committee, Hearings on National Missiles Defences, Washington, 25 July 2000.
27. Robert D. Walpole, CIA, National Intelligence Officer for Strategic and Nuclear Programs, 'The Iranian Ballistic Missile and WMD Threat to the US through 2015', Statement to the International Security, Proliferation and Federal Services Subcommittee of the Senate Governmental Affairs Committee, US Congress, Washington, 21 September 2000.
28. Stephen A. Cambone, Director of Research, Institute for National Defence Studies, National Defence University, Statement, <http://www.fas.org/spp/starwars/congress/2000>
29. Statement of William S. Cohen, Secretary of Defense, before the Senate Armed Services Committee, Hearings on National Missiles Defences, Washington, 25 July 2000.
30. Stephen A. Cambone, Director of Research, Institute for National Defence Studies, National Defence University, Statement, <http://www.fas.org/spp/starwars/congress/2000>
31. NMD would not have to be 100 per cent reliable to be effective.
32. Press Briefing by National Security Adviser Samuel Berger, *Arms Control Today*, September 2000, p. 28.
33. *ibid.*
34. Cited in Mary H. Cooper, 'Missile Defence', *The Congressional Quarterly Researcher*, vol 10, no. 30, p. 691.
35. Patrick Eddington, 'Clinton struck wise note with delay on NMD decision', *Defense News*, 28 August, 2000 p. 36.
36. 'Missile defense system won't harm Russian strategic deterrent', USIA Washington File EPF507, 23 June 2000.
37. US Defence Department's spokesman for the NMD program, Lt Col Rick Lehner, quoted in Mary H. Cooper, 'Missile Defence', *The Congressional Quarterly Researcher*, vol 10, no. 30, p. 696.
38. Testimony of Walter B. Slocombe to the House Armed Services Committee, Hearing on National Missile Defense, 13 October 1999.
39. 'Missile defense system won't harm Russian strategic deterrent', USIA Washington File EPF507, 23 June 2000.
40. Statement of William S. Cohen, Secretary of Defence, before the Senate Armed Services Committee, Hearings on National Missiles Defences, Washington, 25 July 2000. See also Statement by the Undersecretary of Defence for Acquisition and Technology Paul G. Kaminski, 1997, Congressional Hearings, Special Weapons, Nuclear, Chemical, Biological and Missile, 1997.
41. Barbara Opall-Rome and Gopal Ratnam, 'Israeli team defends NMD capabilities', *Defense News*, 28 August 2000, p. 24.

42. Statement of William S. Cohen, Secretary of Defence, before the Senate Armed Services Committee, Hearings on National Missiles Defences, Washington, 25 July 2000.
43. 'Missile defense system won't harm Russian strategic deterrent', USIA Washington File EPF507, 23 June 2000.
44. A good example is the way the technology for energy weapons to shoot down missiles has improved in the last decade. The Israeli and US Armies have jointly developed a ground based chemical laser (Tactical High Energy Laser – THEL) which completed its first successful intercept and destruction of an incoming missile on 9 February 1996. On 6 June 2000, THEL successfully intercepted and destroyed a Katyusha rocket at White Sands Missile Range in the US. See David Rackley, 'A Time to revisit the logic of the US approach to NMD', *Defense and Foreign Affairs Strategic Policy*, September 1999, p. 9. More recently in a third successful test, the THEL tracked and destroyed a salvo of two rockets: '\$470m laser weapon is a knockout', *The Age*, 26 September 2000. As well as chemical lasers, energy weapons offer another more effective alternative to using missiles. Lasers intercept targets at the speed of light, they use fewer integrated systems than a missile based system, and they can be fired multiple times.
45. Quoted in *The Congressional Quarterly Researcher*, 8 September 2000, vol 10, no. 30, p. 689.
46. *ibid.*
47. The ABM Treaty imposes 'ridiculous architecture restrictions' which rule out the development, testing and deployment of sea-based, space-based and mobile, land-based ABM systems and allow only a fixed ground based missile systems. Eugene Fox and Stanley Orman, 'Make Commitment to NMD, US Must Surmount Treaty Limits, Foreign Opinion', *Defense News*, 6 November 2000, p. 19. In Richard Perle's view, it would be best to get away from the confines of the ABM Treaty and aim for a more comprehensive space and sea-based system that can detect and intercept hostile missiles, or missiles launched accidentally, during their vulnerable boost phase. Richard Perle 'A Better Way to Build a Missile Defense', *Defense News*, 13 October 2000.
48. Statement of William S. Cohen, Secretary of Defense, before the Senate Armed Services Committee, Hearings on National Missiles Defences, Washington, 25 July 2000.
49. 'Keeping Arms Control Relevant: Ten Observations', Speech to IISS, London, 2 November 2000, Washington File, EPF409.
50. See Dean A. Wilkening, 'Amending the ABM Treaty', *Survival*, vol 42, no. 1, Spring 2000, p. 29.
51. 'Missile defense system won't harm Russian strategic deterrent', USIA Washington File EPF507, 23 June 2000.
52. 'Clinton says no to NMD as program lags; cites technology doubts and foreign concerns', *Arms Control Today*, September 2000, p. 19.

53. An adviser to George W Bush, Stephen Hadley has argued that the US should thus try to calm Russian and Chinese apprehension about NMD. Carla Anne Robbins, 'Bipartisan US thinkers study new arms control', *Asian Wall Street Journal*, Washington, 19–21 May 2000.
54. 'Missile Defence System won't harm Russian Strategic Deterrent', Washington File EPF507.
55. Frank Gaffney, 'New President will have full plate on security issues', *Defense News*, 27 November 2000, p. 15.
56. Testimony of Walter B. Slocombe to the House Armed Services Committee, Hearing on National Missile Defense, 13 October 1999.
57. 'Missile Defences A Shield in Space', *The Economist*, 3 June 2000, p. 19.
58. 'US Soothes China concerns over missile defense plans', *Agence France Presse*, Hong Kong, 8 July 2000; and Charles Ferguson, 'Sparking a buildup: US missile defence and China's nuclear arsenal', *Arms Control Today*, March 2000, p. 13.
59. Sha Zukang, 'The Global Strategic Balance and Stability Brook No Disruption', *Beijing Review*, 14 August 2000, p. 8.
60. Quoted in Charles D. Ferguson 'Bait and Switch: Is Anti-North Korean Missile Defense Designed for China?', *Journal of the Federation of American Scientists*, November–December 1999.
61. Robert L. Garwin, 'Boost Phase Intercept: A Better Alternative', *Arms Control Today*, September 2000, p. 8.
62. 'China against revising ABM Treaty', *China Daily*, 19 October 2000.
63. Sha Zukang, 'The Global Strategic Balance and Stability Brook No Disruption', *Beijing Review*, 14 August 2000, p. 8. See also Dean A. Wilkening, *Ballistic Missile Defence and Strategic Stability*, IISS, Adelphi Paper 334, May 2000. He argues that there is no immediate need to deploy NMD because an accidental launch is unlikely. NMD would however eliminate China's strategic deterrent capability and it will be forced to modernise, MIRV and multiply its ICBMs.
64. 'Missile defense system won't harm Russian strategic deterrent', USIA Washington File EPF507, 23 June 2000.
65. 'China and Missile Defence', Report from the Nixon Centre, 19 October 2000.
66. Peter Brookes, 'Theater Missile Defence: How will it recast security and diplomacy in East Asia?', Heritage Lectures, no. 683, 27 August 2000, <http://www.heritage.org/library/lecture/hl683.html>
67. David Rackley, 'A Time to Revisit the Logic of the US Approach to NMD', in *Defense and Foreign Affairs Strategic Policy*, September 2000, p. 9.
68. Stephen A. Cambone, Director of Research, Institute for National Defence Studies, National Defence University, Statement, <http://www.fas.org/spp/starwars/congress/2000>
69. *ibid.*

70. Quoted by Senator Jon Kyl, (Republican, Arizona), speech, US Senate, 10 October 2000, USIA Washington File, 11 October 2000. See also the remarks by Professor Zhang Zhaozhong, National Defence University, quoted in 'Will foreign armed forces be involved in a war between the two sides of the Taiwan Straits', *Ta Kung Pao*, Hong Kong, 17 August 1999.
71. Stephen A. Cambone, loc. cit.
72. *ibid.*
73. Robert D. Walpole, CIA, National Intelligence Officer for Strategic and Nuclear Programs, 'The Iranian Ballistic Missile and WMD Threat to the US through 2015', Statement to the International Security, Proliferation and Federal Services Subcommittee of the Senate Governmental Affairs Committee, US Congress, Washington, 21 September 2000.
74. 'Taiwan confirms nuclear weapons and MRBMs', *Defense & Foreign Affairs Strategic Policy*, 23 March 2000, p. 3.
75. 'Defence Minister, Tang Fei says Taiwan to build its own missile defence', *Central News Agency*, Taipei, 23 August 1999; 'Defense Minister Wu Shih-wen maps out Taiwan's military build-up plans', *Central News Agency*, Taipei, 2 July 2000. Taiwan gave up the development of nuclear weapons and a missile program in the 1980s under pressure from the US and promises of US protection.
76. Richard D. Fisher, 'China increases its military forces while opposing US missile defense', Heritage Foundation, Background, 7 April 1999.
77. Testimony of Walter B. Slocombe to the House Armed Services Committee, Hearing on National Missile Defense, 13 October 1999.
78. Statement by the Undersecretary of Defence for Acquisition and Technology Paul G. Kaminski, 1997, Congressional Hearings, Special Weapons, Nuclear, Chemical, Biological and Missile, 1997.
79. Joseph Cirincione, 'Assessing the Assessment: the 1999 National Intelligence Estimate of the Ballistic Missile Threat', *NonProliferation Review*, vol. VII no.1 (Spring 2000).
80. For instance the 1990 edition included a preface by then US Defense Secretary Cheney in which he claimed that 'The Soviet threat is changing, but it is not going away'. US Department of Defense, *Soviet Military Power 1990*, Washington 1990, p. 4. Mr Cheney was the Republican vice-presidential candidate in this year's US election.
81. Kim Jong-il's statesmanship was praised by State Department spokesperson Richard Boucher in a Press Briefing held on 15 June 2000. See: <http://secretary.state.gov/www/briefings/0006/000615db.html>.
82. Statement by CIA Director, George C. Tenet, before the US Senate Select Committee on Intelligence, 2 February 2000. From http://www.cia.gov/cia/public_affairs/speeches/dci_speech_020200.html.
83. Ed Blanche and Duncan Lennox, 'Shifting Balance', *Jane's Defence Weekly*, 10 March 1999, p. 60.

84. Robert D. Walpole, 'The Iranian Ballistic Missile and WMD Threat to the United States Through 2015', Statement for the Record to the International Security, Proliferation and Federal Services Subcommittee of the Senate Governmental Affairs Committee, 21 September 2000. Mr Walpole is National Intelligence Officer for Strategic and Nuclear Programs. Though this statement records the Iranian announcement that *Shahab 3* will be the last Iranian ballistic missile, it is only fair to note that the burden of Walpole's statement amounts to disbelief of the Iranian claim.
85. Andrew Koch, 'Third Iranian Shahab test 'a fizzle'', *Jane's Intelligence Review*, November 2000, p.5.
86. As reported on SBS TV World News, 22 September 2000.
87. Statement by CIA Director, George C. Tenet, before the US Senate Select Committee on Intelligence, 2 February 2000. From http://www.cia.gov/cia/public_affairs/speeches/dci_speech_020200.html.
88. Ian Bickerton *et al*, *43 Days: The Gulf War*, ABC Books 1991, p. 59.
89. Statement by CIA Director, George C. Tenet, before the US Senate Select Committee on Intelligence, 2 February 2000. From http://www.cia.gov/cia/public_affairs/speeches/dci_speech_020200.html.
90. Ehsan Ahrari, 'Rogue State Debate Offers Little Rationale for NMD', *Defense News*, 14 August 2000, p. 15.
91. 'National Missile Defense Review Committee Report: Text of the Welch Report', *Arms Control Today*, November 1999, p. 14. The 12-member panel included five retired US military officers, one of whom (Gen Larry Welch, USAF-ret) chaired it.
92. 'Russia's Concerns' in 'US Draft Protocol to the ABM Treaty and Associated 'Talking Points'', *Arms Control Today*, May 2000, p. 23. The US has neither confirmed nor denied the authenticity of this document.
93. Wade Boese, 'GOP Says Limited NMD Plans Are Not Enough', *Arms Control Today*, May 2000, p. 41.
94. *Remarks by the President on National Missile Defense, op.cit.*
95. 'National Missile Defense Review Committee Report: Text of the Welch Report', p. 14.
96. M. McIntosh and R. Prescott, *Report to the Minister for Defence on the Collins Class Submarine and Related Matters*, Canberra, June 1999, p. 23.
97. George N. Lewis *et al*, 'Why National Missile Defense Won't Work', *Scientific American*, August 1999, p. 39.
98. This issue was discussed in Gary Brown, *Military Threats Versus Security Problems: Australia's Emerging Strategic Environment*, IRS Research Paper No.1, 1999–2000, August 1999, pp. 6–8.
99. Gaurav Kampani and Peter Saracino, 'National Missile Defense Threatens Stability in South Asia', *Defense News*, 10 July 2000.

100. Wade Boese, 'GOP Says Limited NMD Plans Are Not Enough', *Arms Control Today*, May 2000, p. 41.
101. *ALP Platform 2000*, as adopted at the 42nd National Conference, Hobart, 31 July to 3 August 2000, p.15–21.
102. See note 1, above.
103. 'Putin Bends Clinton's Ear Hoping To Halt Missile Shield', *New York Times*, 22 July 2000; G-8 Ministers: Shield Unwelcome' *Washington Post*, 14 July 2000.
104. *Neither Isolated nor Isolationist: Inaugural Hasluck Oration*, Murdoch University, 9 August 2000. From: http://www.dfat.gov.au/media/speeches/foreign/2000/000809_isolate.html.
105. The claim appeared in *Peoples' Daily*, 7 August 1996 (I am indebted to Gary Klintworth for the reference). See also Michael Dwyer, 'McLachlan hits back over defence ties with US', *Australian Financial Review*, 23 September 1996.
106. China's military is analysed in Gary Brown, *China as a Military Power: Peril or Paper Tiger?*, IRS Research Paper no. 1, 1996–97. China's nuclear forces are discussed at pp. 20–22 of that paper.
107. *China White Paper on National Defense 2000*, section 1, para 5.
108. Parliament of Australia, Senate Foreign Affairs, Defence and Trade Legislation Committee, *Additional Information Received, Additional Estimates 1999–2000*, vol.1, April 2000, pp.53–54.
109. P. LaFranchi, 'Australia approves cash for spy satellite ground link', *Flight International*, 22–28 August 2000, p. 23. The Minister made his remarks at a press conference with his American counterpart, Mr William Cohen, held in Sydney on 17 July 2000. See: <http://www.minister.defence.gov.au/2000/index.html> .for access.
110. Gopal Ratnam and Jeremy Singer, 'Support Falters for SBIRS Low', *Defense News*, 18 September 2000, pp. 1 and 60.
111. Many countries have indicated their opposition to NMD by opposing revision of the ABM Treaty. Others however, have reserved their position. In November 2000, in a vote on a UN General Assembly Resolution on preserving the ABM Treaty, the numbers were 88 in favour (including China, North Korea, France and Russia), with five (including the US) against. On the other hand, there were 66 abstentions (including Australia, Canada, the United Kingdom, Germany, Italy, South Korea and Japan). 'General Assembly adopts 49 Disarmament, International Security Texts on Recommendation of its First Committee', UN General Assembly, New York, Press Release GA/9829, 20 November 2000.