matter how great the technical success of U.S. and Soviet defense transitions, the competition between offense and defense will not stop. Neither superpower is likely to abandon permanently all hope of gaining a major advantage by developing both effective offensive and defensive weapons.

One must assume that both the Soviet Union and the United States prefer a condition wherein *both* their offensive *and* their defensive capabilities are effective, to a condition wherein only their defensive weapons can perform as intended. Neither side, however, is likely to anticipate an enduring advantage in strategic offensive and defensive systems; both will be constrained to accept much more limited offensive targeting capabilities than now exist. Future missions for U.S. strategic offensive forces may include the following: guarding the defense transition; holding at risk so many high-value assets of the Soviet state that the Soviet leaders perceive a substantial net advantage in negotiating a major bilateral drawdown in offensive forces (thereby assisting the U.S. defense transition); providing an enduring hedge against sudden revelation of weaknesses in defensive systems; and providing some deterrent effect in order to help discourage gross misbehavior by third parties.

The public debate over the orientation of future U.S. strategic policy that was triggered by President Reagan's defense initiative proposal of March 23, 1983, has revealed all too plainly that there are more and less sensible ways to think about defense.

Strategic defense should not be viewed in terms of an all-or-nothing "astrodome." "Star wars" defenses, no matter how great their promise, will not constitute the last move in high-technology arms competition, and strategic defensive technology will not solve the fundamental problems of political rivalry. But strategic defense, embracing a wide range of near-term and far-term weaponry, promises to strengthen the stability of deterrence by imposing major new uncertainties upon any potential attack. In the long run, it holds out the possibility of transforming, though not transcending, the Soviet-American deterrence relationship.

NO.4 - SPRING 1984

William E. Burrows

BALLISTIC MISSILE DEFENSE: THE ILLUSION OF SECURITY

Toward the end of what almost immediately came to be called his "Star Wars" speech in March of 1983, President Reagan concluded an impassioned defense of his arms budget by proposing that American scientists begin research on a very advanced system that could protect the West from ballistic missile attack by the turn of the century or soon thereafter.

"What if free people could live secure in the knowledge that their security did not rest upon the threat of instant U.S. retaliation to deter a Soviet attack; that we could intercept and destroy strategic ballistic missiles before they reached our own soil or that of our allies?," the President asked, rhetorically. The effect of the statement was to make public his belief that an effective ballistic missile defense (BMD) might well be feasible and, if so, that it could lead to an arms control breakthrough of monumental proportions while guaranteeing the safety of the nations of the Western Alliance.

The reference to ballistic missile defense was the catalyst for the creation of two blue-ribbon panels, composed for the most part of aerospace specialists from industry, think tanks, research institutions and the Pentagon. After spending the summer studying the problem, the panels submitted reports in mid-autumn which came to the conclusion that an effective ballistic missile defense is so promising that an initial five-year research effort is warranted at a cost of about $26 billion (or nearly as much as it took to land men on the moon). The goal, according to a combined report, is to have a multilayered ballistic missile defense in place within 20 years at a cost estimated at between $250–$500 billion. The panels' conclusions, which were heartily endorsed by Secretary of Defense Caspar Weinberger and applauded by the trade press, touched off a frenzy of activity within the industry and among a wide variety of defense-dependent research institutions.

It is not difficult to understand the initial appeal of the BMD concept. The possibility of assured protection against nuclear attack

---

William E. Burrows is Director of the Science and Environmental Reporting Program at New York University. He has written on aeronautics and astronautics for more than twenty years, for various magazines and as a reporter for *The New York Times*, *The Washington Post* and *The Wall Street Journal*. He is currently working on a book on strategic reconnaissance and national security.

is undeniably attractive to large segments of the populations of the United States and many of its allies, who are becoming increasingly alarmed at the prospect of nuclear war. The proposed BMD also has considerable public relations value in that it appears at first glance to be purely defensive, rather than offensive, and could therefore easily be taken to be nonaggressive. Its advocates maintain that since its effectiveness depends upon self-protection, not upon the threat of retaliation (massive or otherwise), the Kremlin has no cause to fear it.

Yet, in fact, the "Star Wars" ballistic missile defense concept, or the Strategic Defense Initiative, as it was later christened, is a dangerous hoax and a cruel and potentially expensive exercise in self-deception. To believe that an adequate shield against nuclear attack is possible requires an extravagant faith in wishful concepts of high-technology defense, together with an extravagantly pessimistic assessment of the new offensive developments which would undoubtedly accompany any BMD initiative. To believe that a BMD program would help stabilize the arms race is to believe that the Kremlin would allow the United States to make itself invulnerable to attack at the same time that we are perfecting offensive systems which could pulverize Soviet targets with impunity. This defies reason. As the ballistic missile defense takes shape, so too will the means necessary to assure that it will not work as required.

A ballistic missile defense system would in fact fuel the arms race, not curtail it, by forcing the Russians to vastly increase the number and variety of their missiles and warheads, improve their quality, develop new ways of delivering them, perfect advanced penetration aids, and deploy specific counterweapons, such as anti-satellite (ASAT) systems, to thwart American defenses. An American BMD would, moreover, be staggeringly expensive to develop and produce, not only in terms of direct outlays, but as measured in the research and manufacturing time that could be invested more constructively in any number of other, more realistic, projects both on earth and above it. And not least, an American BMD effort would seriously damage American political credibility by violating the Limited Test Ban Treaty, the Outer Space treaty, and the extremely important Anti-Ballistic Missile treaty, while distracting interest and attention from far more important initiatives such as a comprehensive, verifiable freeze on weapons testing, which is what is really needed.

Ballistic missile defense is a contradiction in terms: the defense and the offense have forevermore become indistinguishable.

II

In strategic bombing, the attacker has always held the advantage—if that term is defined by the rate of success in reaching the target and hitting it. This was the case in World War II because the offense usually had the benefit of some element of surprise, choosing where and when to strike. The attacker was also able to mount massive raids with hundreds of bombers that literally ran over the defenders in many instances or else skirted them altogether. The defense, on the other hand, was forced to spread fighter-interceptors and antiaircraft batteries thinly enough so that as many likely targets as possible had some measure of protection, though none ever really had enough.

The fact that strategic bombing was, with one exception, not decisive in the last war had far more to do with the relatively low destructive power of each bomb than with the number of them dropped. The exception, of course, was the double atomic attack on Japan. Only two of those bombs, both immensely destructive, were enough to convince Tokyo that further resistance was futile. Had the United States launched a single raid against the home islands with 1,000 B-29s, each carrying an atomic bomb, and had 998 of them been shot down before reaching their targets—a defensive feat without parallel in the history of aviation—the result would have been the same. The destructiveness of nuclear weapons and, to a lesser but significant extent, the speed and variety of their delivery systems, have served to increase the attacker's edge by an enormous margin. So few need reach the target where so many were needed before.

Although defense against ballistic missiles was actively contemplated by the United States as early as 1944 because of the German A-4 attacks against England, work actually began on the first real American anti-ballistic missile (ABM) system, Nike-Zeus, in 1956, in anticipation of the day when the Soviet Union developed its first intercontinental ballistic missile (ICBM). Between 1958 and 1961, however, a fierce technical debate raged over whether Nike-Zeus could function adequately in a saturation attack, discriminate between real warheads and decoys, and survive the destruction of its radar. President Kennedy finally decided that Nike-Zeus was not up to the task of protecting the nation against massive attack and ordered the program suspended.

But high-technology defense projects tend to have persistent lives of their own because of the engineer's infatuation with his creation and the corporate manager's unshakable belief that sooner or later

national defense requirements can be shaped to depend upon whatever hardware is on the shelf or drawing board. And so it was with Nike-Zeus. The weapon was soon transformed into a component of a new system, Nike-X, which relied on a phased-array radar apparatus that could track scores of incoming warheads at the same time. Nike-Zeus was to be Nike-X's long-range interceptor while yet another missile, named Sprint, was to handle close-in defense of the silos in which ICBMs are based.

As the tide of relations between the United States, the Soviet Union and Communist China ebbed and flowed during the 1960s and into the 1970s, so too did plans for ABM systems. In 1967 Lyndon Johnson responded to détente with the Russians on the one hand, and conservative accusations of a "no win" policy in Vietnam on the other, by perceiving an ICBM threat from the Communist Chinese. Accordingly, he authorized deployment of Sentinel, which was basically a souped-up Nike-X, to provide a "thin" defense against attack from the Orient. (Since the Chinese had yet to test a long-range missile by that time, let alone deploy it in quantity, their offensive capability can be said to have been even thinner than the American defensive capability.) Sentinel was in turn canceled by President Nixon in 1969, largely because of the impending rapprochement with Communist China, but also because of public unhappiness with it and congressional exasperation with what it took to be the executive branch's aggressiveness and the Pentagon's seemingly uncontrollable appetite for new weapons. In addition, Sentinel was attacked by a sizable number of scientists who insisted that it would never work as advertised.

Sentinel, in its turn, gave way to Safeguard, which was repositioned to guard the routes it was thought Soviet ICBMs would use to strike the silos of their American counterparts. Unlike its predecessors, Safeguard survived a series of challenges by citizens' groups, the liberal press, congressional opponents, and the same scientists and intellectuals who had been attacking ballistic missile defense from the beginning. It became the only American ABM actually to be deployed, with a detachment going to Grand Forks Air Force Base in North Dakota to protect the Minuteman silos there.

Whether or not President Nixon really believed in Safeguard as an effective weapon, he did make skillful use of it in negotiations with the Soviet Union on the Anti-Ballistic Missile treaty that is part of the Strategic Arms Limitation Talks (SALT I) agreements of 1972. As amended two years later, the ABM treaty allows each side to have only one, fixed, land-based facility with no more than 100 missiles

and launchers, and prohibits a reload capability. It also limits the number of large phased-array radars at the ABM site and prohibits the construction of others except along national borders. In addition, the treaty specifically prohibits the development, testing or deployment of mobile land-based, sea-based, air-based, or space-based ABM systems. It is the clear intention of the treaty to severely restrict ballistic missile defense capabilities and therefore to leave each side's retaliatory forces unchallenged.

The United States decided in 1975 that the expense of maintaining the solitary ABM battery at Grand Forks was not worth the negligible protection it offered, so the missiles were removed, leaving only the radar in operation. The Russians chose to deploy their allotted ABM facility for the defense of Moscow, and they still have it there. Although in the ensuing years both sides have been involved in research on lasers and other kinds of weapons that could be adapted to ballistic missile defense, that is pretty much where matters stood until the "Star Wars" speech.

III

The short, concluding segment of President Reagan's speech that earned it the "Star Wars" epithet seemed almost to have been an afterthought appended to a main text of far greater moment. It startled hawks and doves alike and drew immediate, reflexive rebuttal from many of the same columnists and scientists who have opposed BMD all along. But it just as quickly rekindled the notion that with the encouragement of the White House, a real defense against ballistic missile attack might finally be on the horizon or, at any rate, somewhere just beyond it. The speech amounted to a benediction for the Air Force, the aerospace industry, and the many research institutions that have been scrounging for federal funds since the end of the Apollo moon landing program.

There are a number of ways to fashion a ballistic missile defense, but the common denominator of the most favored concepts, including those presented to the President by the two special panels, involves the use of so-called directed energy weapons, such as lasers or particle beams, and very high speed pellet guns used in a multilayered, or tiered, defense in depth.

The idea, according to preliminary studies, would be to attack Soviet ICBMs continuously during every stage of their flight, which is in most cases about 30 minutes long. Particular emphasis, however, would be placed on hitting the boosters within the first five minutes of their having emerged from their silos. This might be done either by using directed energy weapons to burn holes in their

skin or by smashing them, head-on, with salvos of high-speed pellets. Destroying the missiles immediately after they are launched, and therefore before they disgorge their independently-targeted warheads, would be far preferable to having to cope with ten or more times the number of warheads in the post-boost, mid-course, and terminal phases of flight.

The second layer of defense would involve attacking the separated warheads in mid-course. In the case of ICBMs, this phase would last for about 20 minutes, or as long as it takes the warheads to arc up and out of the atmosphere and then plunge back down into it as they bear down on their targets. Intermediate-range and submarine-launched ballistic missiles (IRBMs and SLBMs) would have shorter trajectories, of course, so the response time of the defense would have to be even quicker.

The third layer, variously known as point, or terminal, defense, would amount to a last-ditch attempt to stop the remaining warheads by firing nuclear-tipped rockets, probably similar to the old Sprint type, right at them at point-blank range. Dense salvos of pellets might also be used for terminal defense, according to those studying the matter.

As presently envisioned, the new BMD would depend very heavily on being able somehow to get near enough to the Soviet silos to hit the boosters at, or immediately after, lift-off. Ideally, the BMD would be able to attack about 2,000 boosters within 300 seconds of their coming out of silos and submarine hatches. Only lasers, particle beam weapons, or hypervelocity electromagnetic railguns, firing very dense fusillades of pellets at terrific speed, are thought by the BMD researchers to be fast enough to warrant serious consideration at this point. The Lawrence Livermore Laboratory in California is also working on a nuclear-pumped x-ray laser which would develop its energy from a nuclear explosion on the order of the ones that went off at Hiroshima and Nagasaki.

Where to put these weapons? There are three possibilities: in orbit, on earth, or both.

Space-based BMD systems have obvious advantages, because they would be poised for almost immediate response when an enemy ICBM attack is detected, and would require an absolute minimum amount of time to attack all of the ascending enemy rocket boosters. Plans for a space-based system generally envision the deployment of a fleet of permanently orbiting space battle stations, each weighing on the order of 100 tons and able to generate its own laser, particle beam, or pellet salvo.

The earth-based system would most likely involve the use of

many widely scattered laser or particle beam generators firing at "fighting" or "mission" mirrors that would be sent into orbit on warning of an attack. The mirrors would redirect the energy beams at the rising boosters and at those warheads that separate from whatever boosters manage to leak through the first layer of defense. The angles of the mirrors, which would have to change in fractions of a second with extraordinary accuracy in order to deal with the heavy missile barrage, would be controlled either by their own sensors and computers or by surveillance and battle management satellites parked in geostationary orbit some 60,000 miles above the war. Since the relatively few surveillance and battle management satellites would be prime targets for enemy anti-satellites, it is safe to assume that the fighting mirrors would have to carry their own sensors and computers programmed with sufficient artificial intelligence so that they could carry on even if the master satellites were knocked out of action.

Serious consideration is also being given to the possibility of using a pop-up system in which the fighting mirrors would be mounted, collapsed, on Midgetman ICBM boosters and deployed on the northern periphery of the continent, and particularly in the Arctic. At the first indication from surveillance satellites that an enemy attack was imminent, the theory goes, the Midgetmen and their mirrors would be shot into orbit. The mirrors would then spring open, ready to direct the lasers at the rising Soviet missiles. Unlike permanently orbiting battle stations or fighting mirrors, the pop-up system would not allow the enemy time to draw a bead on it with its own lasers or counter it with other kinds of weapons, such as space mines.

Advocates of a new ballistic missile defense system point out, rightly, that research is barely beginning and that no sure technical route is at hand. The Defensive Technologies Study Team, one of the two groups that reported to the President last autumn, has recommended a $21.1-billion research and development program through fiscal year 1989, with special emphasis on surveillance, acquisition and tracking systems, directed energy weapons, battle management, command, control and communication systems, survivability and target hardness studies, "lethality," and support system concepts. In the weapons area, special attention is to be given to the hypervelocity gun, chemical infrared high-energy lasers, the nuclear-pumped x-ray laser, a free electron laser and a particle beam weapon, among others.

No one associated with the new BMD seems to believe that it would be 100-percent effective, though many claim that it could

theoretically come very close to that by the time it is ready for deployment, in about 20 years. The Defensive Technologies Study Team has been quoted as reporting to the President that BMD does not have to be perfect to be worth its considerable cost. "Rather, defense [against ballistic missile attack] can meet the President's objectives by providing an incentive for the Soviet Union to reduce reliance on ballistic missiles and agree to arms control limitations on their numbers and capabilities."[1]

Even a cursory study of postwar relations between the United States and the Soviet Union suggests that the Kremlin's reaction to a serious American BMD would be quite the opposite of reducing its reliance on strategic missiles. In any case, how effective might the new ballistic missile defense be?

IV

The designers of the proposed system face some formidable challenges. The BMD would have to be able to stop a variety of warheads, including those delivered by ICBMs, IRBMs, and SLBMs. And, the "ballistic" in its name notwithstanding, it or a supplementary system would also have to cope with very large numbers of land-, air-, and sea-launched cruise missiles. All of those warheads—thousands of them, most about the size of a basketball—would be coming at the same time from almost every conceivable direction, at altitudes between 100 feet and 600 miles, and, for the most part, flying at very high speed. Stopping them would require a defensive system able to react with almost unbelievable speed and flawless lethality since, as has been indicated, the tremendous explosive capability of nuclear weapons means that even a tiny percentage of those that "leak" through the shield would wreak catastrophic damage on their targets.

The BMD would in the first instance have to rely on an extensive and extremely intricate "surveillance and battle management system" that would be able to provide accurate data on the enemy's preparations for a missile launch and then direct a lightning-quick counterattack over much of the Northern Hemisphere, including Eastern Europe and the Atlantic and Pacific Oceans. The crucial surveillance function would not only require highly advanced versions of the infrared early-warning and real-time imaging and acoustical satellites currently in use but, most likely, manned stations as well.

[1] Clarence A. Robinson, "Study Urges Exploiting of Technologies," *Aviation Week and Space Technology*, October 24, 1983, pp. 51, 55.

And what of the weapons themselves? Permanently orbiting battle stations would not only be immensely provocative, they would also have a serious military disadvantage, as would orbiting fighting mirrors. The predictability of their orbits would allow the Russians ample opportunity to set up an attack from the ground using either lasers or large numbers of anti-satellite weapons in a concerted attempt to disrupt or nullify the defense. More likely, space mines would be sent into orbit near each of the battle stations or mirrors so that they could be detonated immediately before an all-out ballistic missile launch. The probable response to the mines would be to send up mine-killing attack satellites that would shadow the mines that shadowed the battle stations or mirrors, and so forth, ad absurdum.

The pop-up system also comes with thorny problems. Boosting the mirrors into firing position after the enemy missile launch but well before five minutes have elapsed defies probability. They would therefore have to be launched before the attack, based on warnings by the strategic surveillance apparatus. And that warning, as well as the signal to commence firing, would be determined not by humans, but by measurable criteria programmed into super-computers. In other words, events would move so quickly that computers would have to make the crucial decision to respond to whatever was perceived to be an attack.

But who would define the threat threshold for the computers and by what criteria? How close to a launch would the other side have to come before the computers ordered the Midgetmen to carry their mirrors to attack position? What would happen to all of those expensive missiles and mirrors, poised for the kill, if the Russians suddenly stood down at the end of what turned out to be nothing more than an elaborate exercise? What might happen if the computers were duped into launching the mirrors prematurely, only to have them attacked by mines or other anti-satellite weapons days or weeks later?

The obvious disadvantage of Livermore's nuclear-pumped x-ray laser has to do with the fact that it would destroy itself making that first shot. Were such weapons to be orbited, then, there would have to be one nuclear-pumped x-ray laser for each booster or, even worse, for each warhead. All of those nuclear explosions combined would very likely cause electronic pulse radiation sufficient to disrupt our own command, control and communication capability, hardened or not. Furthermore, testing of this system, which is the sine qua non of weapons development, would violate the treaty

banning nuclear weapon tests in the atmosphere, in outer space and under water.

The preliminary plan suggests that terminal defense would depend upon either electromagnetic railguns or nuclear-tipped ABMs. This last-ditch attempt to fend off the incoming warheads would have to take place at altitudes of between ten and 35 miles. If railguns were used to stop warheads at such low altitudes, they would have to be placed at every possible target site in the country. If nuclear-tipped ABMs were detonated at such low altitudes, it can also be assumed that the target areas and surrounding countryside would suffer a substantial amount of blast damage and radiation exposure from the very weapons that were defending them.

None of this, of course, even takes into account the fact that the opposition would have 20 years or more to come up with countermeasures, including a variety of sophisticated penetration aids. The BMD would have to sort out thousands of real warheads from undoubtedly excellent decoys, while simultaneously being subjected to massive jamming and other kinds of interference, as well as false image projection. And if the Soviet Union really is ahead of the United States in laser weapons, an assertion frequently made by the Pentagon when research and development budgets are discussed, it is reasonable to assume that Soviet engineers already know quite a bit about protecting boosters and warheads from laser attack by deflection, hardening and other means, and will most probably learn a great deal more during the next 20 years.

Despite these problems, having to do with inherently severe technical limitations and with expected Soviet countermeasures, proponents of the new BMD claim that it is realistic to set a goal of ten-percent leakage in each tier and an overall leakage of only one percent. There is no indication, though, of how the calculations resulting in those numbers were made. This, in turn, raises the suspicion that the numbers are arbitrary and therefore utterly meaningless. To believe them, however, is to accept the notion that 100 of 10,000 warheads (not counting cruise missiles and bombers) would penetrate all of the tiers. If that were to happen, the United States would take 100 direct hits, most of them probably in the megaton range and delivered with considerable accuracy. The resulting death, sickness and destruction would be such that the nation would very likely cease to exist as a functioning society.

Dr. Jerome B. Wiesner, who was President Kennedy's Special Assistant for Science and Technology and went on to become president of the Massachusetts Institute of Technology, challenged the Sentinel system on both political and technical grounds 16 years

ago. He took exception to the calculations that were offered to prove the ABM's effectiveness, and his observations, which are still valid, bear repeating now:

> When we design a system like the Sentinel and then analyze it, we assume almost idealized conditions. We assume it is going to work as specified, or we quite arbitrarily use some reliability estimate like .95. But we can't know whether that is even close to correct, because we have never built or operated anything like Sentinel before. . . . Here it is, the most elaborate, sophisticated, dynamic combination of rocketry, radars, computers, electronics, and other technology ever proposed, and we are expecting that it will work well, and not just well, but perfectly the first time it is tried in a large-scale test.[2]

> [The defender] sits and guesses about the attacker's tactics. If he guesses that one thing is going to happen, he invents a technology to deal with it. If he guesses that something else is going to happen, he invents another technology. But there is always the possibility that something quite unexpected will happen. I do not think the defender is ever going to know really what to expect; the variety of techniques available to a nation planning an offensive system is great enough to keep an anti-ballistic missile system of the kind we are talking about totally off balance.[3]

Not content to let their case rest solely on its technical merits, some who advocate Star Wars doctrine within the Department of Defense are also invoking the oldest shibboleth in the armament cycle: the claim that the other side is doing it too. Starting last August, even as the two special panels were gathering evidence to support BMD research and development, unnamed Pentagon sources began leaking stories to the trade press about accelerated Soviet research in ballistic missile defense and the sudden appearance of Soviet hardware that could be used for enhanced BMD operations in violation of the ABM treaty.

The first leak mentioned the erection of a new radar in central Siberia, near three of the Soviet Union's six SS-18 heavy ICBM complexes. Subsequent articles quoted anonymous Pentagon or CIA sources as saying that the Russians are developing and testing a rapid reload system for their ABM launchers in apparent violation of the ABM treaty; that they are producing antiaircraft and antimissile weapons as part of a pattern that "clearly shows that the Soviets are upgrading their ABM capability and could be preparing for a breakout of the ABM treaty," according to one official; and that they are conducting "vigorous" research in directed energy weapons for BMD. Still another leak had it that the Soviet Union in

[2] *Anti-Ballistic Missile: Yes or No?*, A Special Report from the Center for the Study of Democratic Institutions, New York: Hill and Wang, 1968, p. 5.
[3] *Ibid.*, p. 11.

fact already has the major components in place for a nationwide ballistic missile defense system. "The Soviets may not be able to put up a laser battle station day after tomorrow, but the pace of their massive development program is causing genuine concern here in the White House," yet another unnamed official warned.[4] The last card, then, seems to show a "BMD Gap" which we will fail to close at our peril.

The genuine concern felt in the White House, however, does not seem to be shared by Secretary Weinberger, who has defended the Star Wars doctrine by suggesting that deployment of BMD systems by both sides would actually stabilize the arms race, not fuel it. "I would hope and assume that the Soviets, with all the work they have done and are doing in this field, would develop about the same time an effective defense, which would completely remove these missiles and the fears they cause," he said last summer.[5]

Soviet work on its own BMD has not been substantiated by anyone willing to lend his name to the accusation. Instead, there has been a flurry of insinuations, almost always phrased in the conditional, that are disturbingly reminiscent of the steady stream of distortions and orchestrated innuendo that served as the prelude to the Bomber Gap, the Missile Gap, the ABM Gap, and the MIRV (multiple independently targetable reentry vehicle) Gap. It might be usefully recalled here that the U.S. deployment of MIRVed warheads, which amounted to a major escalation of the arms race, was undertaken as a response to a Soviet ABM system that was in fact virtually useless. The pattern is by now familiar.

If the Russians *are* putting together a ballistic missile defense system, there is no reason to believe that it would work any better than ours, and it probably would not even be that good because of the Soviet Union's chronic difficulties with high-technology production (dire Pentagon warnings to the contrary). But a Soviet BMD would pose two problems, both of them political. First, it would provide the necessary rationale for accelerated work on the U.S. system, thereby starting the customary vicious cycle. In this case, the cycle would require each side's enhancing its offensive capability in order to overcome the other's defense. Second, it would contravene and therefore probably weaken or even end the ABM treaty, which is one of the linchpins of SALT and of arms control generally.

[4] See for example, the following articles in *Aviation Week and Space Technology*: "U.S. Scrutinizing New Soviet Radar," August 22, 1983, pp. 19–20; "Soviets Test Defense Missile Reload," August 29, 1983, p. 19; "Soviet BMD Moves" (Washington Roundup), November 14, 1983, p. 23; "Soviet BMD" (Washington Roundup), December 5, 1983, p. 15; "Soviets Accelerate Missile Defense," January 16, 1984, pp. 14–16.

[5] R. Jeffrey Smith, "The Search for a Nuclear Sanctuary (I)," *Science*, July 1, 1983, p. 30.

Given the research and development frenzy which is surrounding our own BMD effort, expressions of outrage at the Russians seem somewhat disingenuous. Nor is the assertion that the United States is merely seeking to determine whether a BMD is feasible very reassuring. The program manager who will admit that five years of research and more than $20 billion have been wasted on an unworkable system probably has yet to be born.

V

There is every indication that, far from removing strategic missiles, BMD would force both sides to find more inventive ways to attack the other. Three days after the President delivered the Star Wars speech, Soviet leader Yuri Andropov said as much when he predicted that the deployment of such a system would be taken as "a bid to disarm the Soviet Union" that would propel the two nations into a "runaway race" in both strategic nuclear weapons and defensive systems against them.[6]

The most prudent reaction by the Kremlin would be the addition of new ICBM and IRBM complexes, thereby spreading out the targets that U.S. lasers and railguns would have to hit. There would undoubtedly be increased emphasis on production of ballistic missile submarines, equipped not only with depressed-trajectory SLBMs, but with cruise missiles that could almost touch the waves and would therefore be next to impossible to stop effectively. Since a BMD would be entirely dependent on an intricate system of satellite observation, communication, and target tracking, another likely Soviet response would be to develop an advanced ASAT system capable of knocking out satellites at far higher altitudes than is now possible. Given how dependent the United States is on reconnaissance and communication satellites, renewed Soviet emphasis on advanced ASATs would be taken as an extremely threatening development, and one probably necessitating the creation of an anti-ASAT system.

Finally, there would always be the suspicion that the Soviet Union had some means of effectively penetrating the BMD no matter how good it was thought to be, or that the system might not work as it was designed to at the crucial moment because of some unforeseen, massive glitch. Prudence would therefore dictate having a very large retaliatory force, probably about the size of the one currently on alert, to act as a backup deterrent, just in case.

The reader of plans for research and development of the BMD

[6] *The New York Times*, March 27, 1983, p. 1.

will search in vain for any reference to studies of Soviet prospects for penetrating the system through their own technical advances. Nor is mention made of research on the Kremlin's real reaction to it, politically. The only studies listed for funding are those having to do with hardware, and the only hardware deemed important is American. Yet (to recast an over-worn phrase), the question of ballistic missile defense is too important to be left to the generals and technocrats alone. Perhaps the most revealing investment in BMD research would be the creation of an independent team of experts charged with devising, from a Soviet perspective, the most effective technical and political response to an American BMD. There is the nagging suspicion, however, that the system's proponents do not really want to know. Inventing new arms to counter still other arms remains, even after the lessons of postwar history, a more seductive endeavor than merely controlling them.

As Jerome Wiesner has recalled:

> In 1961, when President Kennedy first began to survey his military problems, his attention was drawn forcefully to an anti-missile system, the Nike-Zeus. He began to get a flood of mail, from friends, from Congress, from people in industry. The press pointedly questioned him about his plans to deploy the Nike-Zeus system. He began to see full pages for it in popular magazines like *Life* and *The Saturday Evening Post*, proclaiming how Nike-Zeus would defend America and listing the industrial towns that would profit from the contracts for it—advertisements, by the way, that were generally paid for with government money as contract expenses. . . . This pressure built up to the point where President Kennedy came to feel that the only thing anybody in the country was concerned about was Nike-Zeus. He began to collect Nike-Zeus material. In one corner of a room he had a pile of literature and letters and other materials on the subject. He set out to make himself an expert on the Nike-Zeus and spent hundreds of hours gathering views from the scientific community about it. In the end he decided not to deploy Nike-Zeus. Then something interesting happened. As soon as the decision was made against Nike-Zeus, everybody admitted that it was no good. People began to point out weaknesses in the system—that, for example, it was a system with very little discrimination between what it ought to intercept and the decoys fired to confuse it. Even Mr. McNamara said that to have deployed the Nike-Zeus would have been a very serious mistake.[7]

President Reagan would do well to seek far wider counsel on ballistic missile defense.

[7] *Anti-Ballistic Missile: Yes or No?*, *op. cit.*, pp. 7–8.

Joseph S. Nye, Jr.

CAN AMERICA MANAGE ITS SOVIET POLICY?

American policy toward the Soviet Union has been replete with examples of incoherence and inconsistency. Responding in part to Soviet moves and in part to the political competition inherent in our democratic politics, American attitudes have alternated between overemphasis and underemphasis on the threatening nature of the Soviet Union. The result has been inconsistent policy and missed opportunities.

During the cold war, our exaggeration of Soviet capabilities prevented us from negotiating at a time when our position was strong. Subsequently, the ideological interpretation of policy and domestic political constraints prevented American policy from exploiting the diplomatic opportunities in the Sino-Soviet split for more than a decade after it occurred in the late 1950s. Conversely, the enthusiasm for détente in the 1960s and early 1970s led American officials to underestimate the Soviet military buildup, delay an appropriate response, and encourage false domestic expectations of future restraint in Soviet international behavior. Certainly, changing Soviet tactics have helped trigger American policy changes, but the exaggeration in American attitudes may develop as much from domestic political processes and reactions toward previous swings of the policy pendulum as from the actual changes in Soviet behavior.

In the early part of the 1970s, American power was limited by introspective moral and social concerns in the aftermath of Vietnam and Watergate. The United States spent less in real terms on defense, foreign aid, embassies and foreign broadcasting in 1980 than it did in 1960. Moreover, there was no political consensus on how to bring the non-military aspects of American power (such as our nearly two-to-one advantage in gross national product, our grain reserves, our advanced technology) to bear upon U.S.-Soviet relations. Different groups resisted linking issues or insisted on their preferred linkages. In these circumstances of shifting power, do-

---

Joseph S. Nye, Jr. is Professor of Government at Harvard University, and was Deputy Under Secretary of State, 1977–79. This article is adapted from *The Making of America's Soviet Policy*, edited by Professor Nye, to be published in mid-May by Yale University Press for the Council on Foreign Relations.