Backgrounder

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STAR WARS: THE STRATEGIC DEFENSE INITIATIVE

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STAR WARS: THE STRATEGIC DEFENSE INITIATIVE

INTRODUCTION

Since both superpowers acquired Intercontinental Ballistic Missiles (ICBMs) of extreme accuracy and destructive power in the 1960s, international security has been based on the deterrence of aggression through the possibility of mutually assured destruction. With each side able to mount "strategic" attacks on the central national assets of its opponent (its population, industries and resources rather than just its armed forces), an uneasy but stable standoff existed.

In an address to the nation in March 1983, former U.S. President Ronald Reagan announced the Strategic Defense Initiative (SDI) research program to develop a defence against nuclear missiles. In the next six years, SDI, or "Star Wars" as it became popularly known, became the most massive peacetime defence research project in U.S. history, at a cost of some $17 billion.(1) Following the 1983 announcement, advocates and critics of the program proceeded to replay (with minor variations) a debate that had been held 20 years previously over the pros and cons of Anti-Ballistic Missile (ABM) systems. Although the technological justification and political support for SDI has diminished over the years, especially since the departure of Ronald Reagan, the program still absorbs large amounts of American defence research funds and continues to have important implications for arms control and other issues.

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(1) All dollar amounts given in this paper are in U.S. dollars.

THE ABM DEBATE

In the 1950s both the United States and the USSR began developing air defence systems, such as the U.S. Nike-Zeus and the Nike-X, composed of radar networks and surface-to-air missiles (SAMs) in order to track and intercept enemy bombers capable of delivering nuclear weapons. With the advent of ICBMs, which could deliver nuclear warheads much more quickly and economically, these systems became inadequate for national defence. It was soon apparent that in the offence-versus-defence calculation as regards ICMBs, the offence was clearly favoured: only a near-perfect defence was worth building, since even a "few" nuclear weapons getting through would cause unacceptable damage; and it was much cheaper and easier to construct more missiles or even decoys than it was to develop and deploy an effective ABM system.

While these facts were apparent to the Soviet Union as well, a preoccupation with air defence led to the deployment of a rudimentary ABM system around Moscow. This Soviet ABM deployment gave ammunition to those in the U.S. who favoured similar systems. Critics argued that ABM systems couldn't perform well enough to justify their cost, and that they increased the risk of nuclear war by threatening the security of the opposition's nuclear deterrent. In fact, the argument went, since ABM systems could not give the U.S. a perfect defence against a coordinated "first strike" missile attack, their only real value was as protection against retaliation by whatever few enemy missiles managed to survive a first strike by the U.S. itself - i.e., to prevent a "second strike." Last but not least, by perpetuating an offense/defence race ABMs threatened future arms control agreements.

In 1967, after failing to convince Soviet Premier Alexei Kosygin of the benefits of ABM limitations, the Johnson administration announced its decision to deploy the Sentinel ABM system, although in recognition of the problems with ABM capability it justified this deployment as a hedge against accidental Soviet launches or a future Chinese missile threat. By 1969 the Soviets had begun to reconsider their objections to ABM limits, and the new Nixon administration had announced

that instead of the Sentinel it would deploy the Safeguard system, which was designed for the easier job of protecting U.S. military facilities rather than population centres. (There were many fewer military facilities than cities and towns).

Over the next several years, the ABM debate raged in the United States as work proceeded on the Safeguard system. The Nixon administration had begun discussion of Strategic Arms reductions with the Soviet Union in 1969, and had rapidly realized that ABM limits were both necessary and desirable in order to achieve nuclear arms limits or reductions. In May 1972, the Superpowers signed the Anti-Ballistic Missile (ABM) Treaty as part of the SALT I accords. Under the treaty, which was of unlimited duration, each side was restricted to the deployment of two token ABM systems with 100 missiles apiece; in 1974 this was amended to allow only one site with 100 missiles. Apart from these systems, the treaty prohibited the testing or deployment of sea-based, air-based, space-based or mobile land-based ballistic missile defence systems or components (see Appendices). The Soviet Union chose to retain its ABM system around Moscow, while the U.S. chose to deploy its ABM system to protect an ICBM base near Grand Forks, North Dakota. The Grand Forks system was de-activated in 1976 after only ten months of operation because it was considered too expensive and ineffective. The Soviet ABM system incorporates the same level of technology as the Grand Forks site, and has never employed its full permitted quota of 100 missiles.(2)

THE STRATEGIC DEFENSE INITIATIVE

Ronald Reagan had campaigned in 1980 on the need to address the "window of vulnerability" through which the Soviet Union could supposedly threaten a successful nuclear attack on the United States.

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(2) See Eric Stubbs, "Soviet Strategic Defence Technology," in Bulletin of the Atomic Scientists, April 1987. Also the Council on Economic Priorities, "Soviet Strategic Defense Programs: A Decade Behind the United States," in Star Wars: The Economic Fallout, Ballinger Publishing Co., Cambridge, Mass., 1988.

After being lobbied by right wing defence groups, the President had four meetings with Edward Teller, the so-called "father of the H bomb" and a strong ABM supporter. Subsequently, Reagan's televised speech of 23 March 1983 was drafted by Robert McFarlane, who later became his National Security Advisor. In this speech, Reagan rejected the assumptions of the ABM Treaty, calling upon the American scientific community

> ...those who gave us nuclear weapons, to turn their great talents now to the cause of mankind and world peace, to give us the means of rendering these nuclear weapons impotent and obsolete.

In attempting "to break out of a future that relies solely on offensive retaliation for our security," Reagan argued, "isn't it worth every investment to free the world from the threat of nuclear war?"(3)

The system envisioned by President Reagan consisted of a non-nuclear astrodome which would intercept and destroy ballistic missiles in flight. Given the complexities involved in this task, the SDI system would not be restricted to current ballistic missile technologies, which attack missiles as they near their targets; it would also exploit such exotic technologies as directed energy weapons, rail guns and space-based sensors and weapons to form a multi-layered system which would track and attack the missiles at all phases of their flight, thereby increasing the odds of successfully destroying them. (See Figure 1, which also explains many technical terms to be used in the pages following.)

As originally conceived, the system envisaged by SDI would have had to be capable of certain key functions, according to Dr. Richard DeLauer, U.S. Under-Secretary of Defence for Research and Engineering:(4)

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(3) Quoted in Sidney D. Drell, Philip J. Farley and David Holloway, The Reagan Defense Initiative: A Technical, Political and Arms Control Assessment, Special Report, Center for International Security and Arms Control, Stanford University, California, July 1984, p. 103.

(4) Richard D. DeLauer, "Antiballistic Missile Defense -- The Opportunity and the Challenge," NATO's Sixteen Nations, Vol. 29, No. 6, November 1984, p. 22-26.

FIGURE 1

Phases of a Missile's Flight

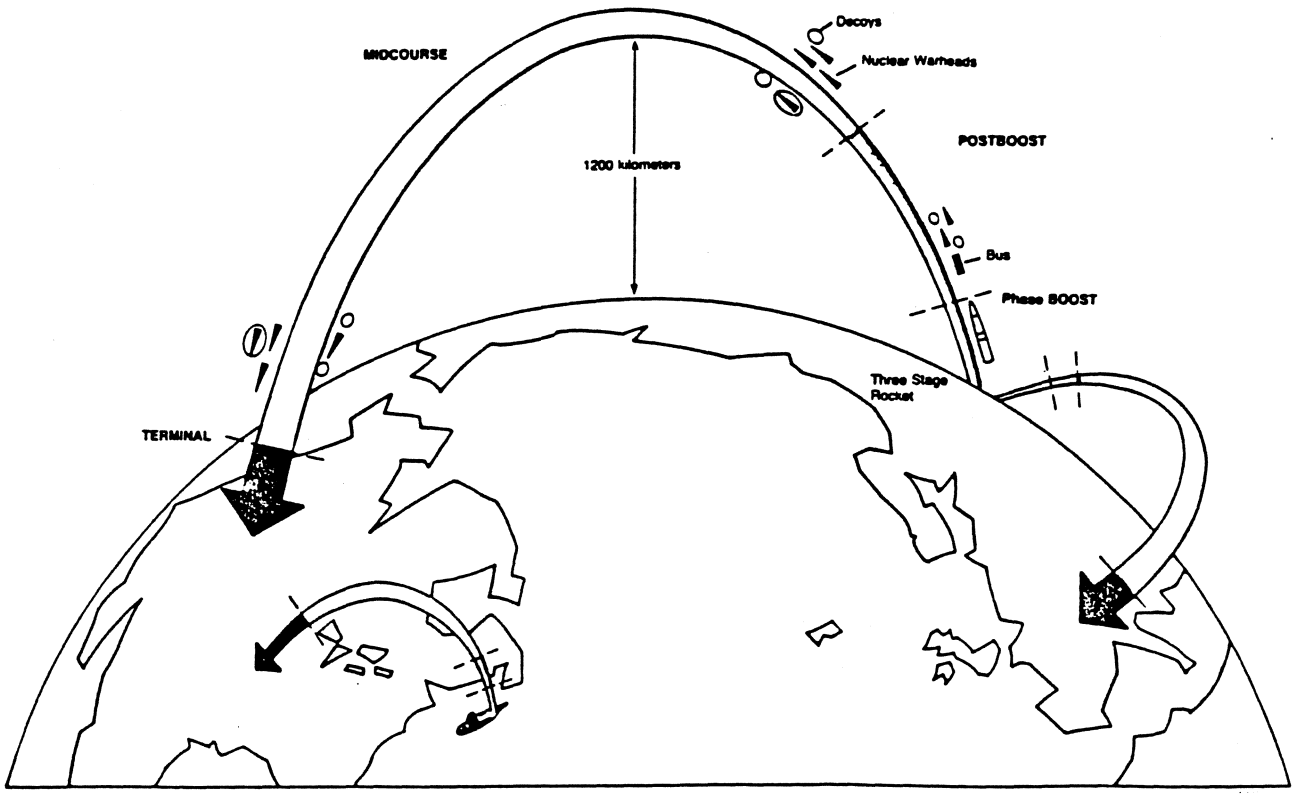
The Strategic Defense Initiative is intended to develop a multi-layered defense to attack missiles throughout their flight. The flight of a ballistic missile can be divided into four phases, each of which presents different problems and opportunities to possible defenses.

Flight begins with the "boost phase," the few minutes between ignition and burnout of the missile's rocket. Missiles in the boost phase are high-value targets because they have not yet released their complement of warheads. A successful attack on a missile in boost phase may destroy as many as a dozen or more nuclear warheads at once as well as possible warhead-mimicking decoys. But attacks on missiles in the boost phase generally require space-based weapons which are likely to be costly and vulnerable. Although the missile's rocket flare is easily detectable during the boost phase, the time for boost-phase attack is short: the rockets of current long-range missiles burn for three to five minutes, and future "fast-burn boosters" may complete their boost phase in a minute or less, making boost-phase attack extremely difficult.

The "post-boost phase" is the period during which the missile's "bus" maneuvers to place its warheads and decoys on the proper trajectories to their targets: the advantages and disadvantages of attacking a missile in the post-boost phase are similar to those of the boost phase, though the engines of the missile bus are smaller and more difficult to detect than the missile's main rockets.

The "midcourse phase" is the relatively long central portion of the flight in which the warheads coast through space, possibly accompanied by hundreds of thousands of decoys and other "penetration aids." For an ICBM, the midcourse phase lasts some 20 to 25 minutes, giving the defense more time to attack. However, discriminating the warheads from the thousands of cheap decoys would be very difficult.

The "terminal" or "reentry phase" is the few tens of seconds of a missile's flight when the warheads reenter the atmosphere (hence the term "reentry vehicle") and eventually detonate over or on their targets. Defense in this phase is technologically less demanding than in the other phases, but timelines are extremely short, and very large numbers of interceptors would be required for a nationwide defense, since each target area would have to be defended separately.



Source: Arms Control and National Security: An Introduction.

- **Prompt and Reliable Attack Warning and Defence Initiation**

  Global, full-time surveillance would be required to detect the attack, to define its destination and intensity, and to provide data for boost-phase intercept and post-boost tracking.

- **Continuous Tracking of All Threatening Objects Throughout Their Trajectories**

  The tracking system would have to assemble the required information with accurate and timely data transfer to intercept systems for attack assignment.

- **Efficient Intercept and Destruction**

  The defence must be capable of dealing with any attack up to a massive, simultaneous launch.

- **Terminal Intercept**

  The defence must be capable of the relatively short-range engagement of reentering warheads.

- **Battle Management, Communications and Data Processing**

  The defence must have the required connecting elements for its various system components to achieve effectiveness and economy of force.

According to De Lauer, the task of combining these technologies into a meaningful system would demand breakthroughs in eight key areas, each "equivalent to, or greater than, the Manhattan project," which had produced the first atomic bomb.(5) In turn, the U.S. Department of Defense established five technical areas of SDI in which it would concentrate its activities.(6)

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(5) Quoted in Fen Hampson, "The Strategic Defense Initiative," in Unguided Missiles, W.W. Norton and Co., New York, 1989, p. 238.

(6) DeLauer (1984).

- **Surveillance, Acquisition and Tracking**

  The technology must be able to detect, track and discriminate objects in all phases of the ballistic trajectory, while continuing to operate reliably under direct enemy attack and in an environment experiencing the effects of nuclear weapons. All the defensive systems envisaged relied on space-based sensors for early warning; for command, control and communications; and for overall battle management. (The combination of technology and tactics needed to ensure the survival of the space-based components of a defensive system under attack had yet to be developed.)

- **Directed Energy Weapons**

  The goal of directed energy weapons is to deposit, within a brief time, enough energy in the target to destroy it. This line of research was to consider four basic weapons concepts: space-based lasers, ground-based lasers, space-based particle beams and nuclear-driven directed energy weapons.

- **Kinetic Energy Weapons**

  The goal of kinetic energy weapons is to hit attacking missiles with an inert object moving so rapidly that the energy of the collision achieves destruction. Research here would concentrate on interceptor missiles and hyper-velocity gun systems (such as the magnetic rail gun, parked in space, which would employ a magnetic field to accelerate a piece of metal along a rail and fire it at great velocity).

- **Battle Management**

  Technologies would be developed for implementing "a highly responsive, ultra reliable, survivable, endurable and cost effective BM/C^3 [battle management/command, control, and communications] and supporting technologies."

- **Support Programs**

A number of SDI support-related questions required answers and some of the individual programs studying those questions were:

-- lethality and target hardening,
-- system survivability,
-- space prime power and power conversion, and
-- space logistics.

ARMS CONTROL

Critics of the Strategic Defense Initiative immediately denounced the program as a threat to the ABM treaty which provided the basis for nuclear arms control, since it proposed the eventual deployment of space-based ABM components based on new technologies. In October 1985, the administration announced that a close reading of the ABM Treaty (the "legally correct" or "broad" interpretation) did not prohibit the testing or deployment of space-based new technologies, but limited only those technologies available at the time the treaty was signed. Critics, including almost all of the negotiators of the SALT I and ABM treaties, disagreed with this position, favouring the traditional or "narrow" interpretation. As Former President Richard Nixon said,

> As far as what was presented to the Senate was concerned, it was what we call the narrow interpretation. There is no question about that.(7)

The Soviet Union adamantly opposed SDI, arguing that it was aimed at producing space-strike weapons rather than a defence. While it continued to work on basic research related to Ballistic Missile Defence (BMD) systems, it argued that this research was permitted under the treaty and not aimed at the deployment of another ABM system.

In the US Congress, the administration's reinterpretation of the ABM treaty provoked increasing opposition to SDI. Apart from the

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(7) Quoted in "Strategic Defensive Arms Control: The ABM Treaty and Star Wars," in the excellent Arms Control and National Security, The Arms Control Association, Washington, 1989, p. 73.

strong Congressional arms control lobby which valued the ABM treaty for its own sake, many in Congress felt that if an administration could reinterpret treaties on a whim, the role of Congress in the treaty-making process would become marginal.

The reinterpretation of the ABM treaty also caused unease among America's allies. Although Britain and West Germany accepted the U.S. invitation to participate in SDI research in 1985 (and Israel accepted in 1986), a growing chorus of allies argued for a return to the traditional interpretation of the ABM treaty. Although Canada agreed to allow private Canadian companies to participate in the SDI program, it declined to participate on a government-to-government basis because of its concerns about the ABM treaty.(8)

Although the administration agreed, under strong Congressional pressure, to proceed under the narrow interpretation of the ABM treaty, in 1987 the Department of Defense requested authority to proceed with SDI tests under the broad interpretation. As a result, Congress inserted requirements into the 1988 and 1989 Defense Authorization Bills requiring SDI-related tests to be conducted within the narrow interpretation of the ABM treaty.

Although the Soviet Union had consistently said that strategic arms reductions were impossible as long as the United States was determined to proceed with SDI, in the fall of 1989 it agreed to allow negotiations on a Strategic Arms Reduction (START) agreement to proceed without a prior SDI compromise. While this was reported as a major Soviet concession, in fact the USSR was simply allowing the talks to proceed, not changing its opinion of SDI: it reserved the right to withdraw from any future strategic agreement unless an acceptable solution was found to the problem of SDI. By thus putting the United States in the position of seeming willing to give up a completed START agreement rather than compromise on SDI, the Soviets were simply applying more pressure.

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(8) See Douglas Ross, "SDI and Canadian-American Relations," in America's Alliances and Canadian-American Relations, Lauren McKinsey and Kim Nossal eds., Summerhill Press, Toronto, 1988.

THE REDEFINITION OF SDI

After the initial popularity of SDI, it became obvious to most observers than an astrodome defence of the United States was impossible. (Even if an astrodome against ballistic missiles could be built, it still couldn't deal with cruise missiles.) While President Reagan was still speaking in 1986 of SDI leading to "a shield that missiles could not penetrate--a shield that could protect us from nuclear missiles just as a roof protects a family from rain,"(9) and SDI constituted the single largest item in the US defence budget (larger than the technological research base of the Army, Navy and Air Force combined), organizations such as the Federation of Concerned Scientists and the Congressional Office of Technology Assessment continued to issue increasingly critical reports on SDI. As early as 1984 the emphasis within the SDI program had shifted from the most exotic technologies to more "mature" ones such as kinetic energy weapons--metal "bullets" which destroy enemy missiles by high-speed collision--as Fen Hampson notes, the modern version of cannon balls.(10)

As both the conceptual and technical problems related to SDI became more apparent, the Strategic Defense Initiative Organization (SDIO), which ran the program, became more agile in adapting the program to be all things to all people. In 1987 the American Physical Society issued an authoritative report which agreed with critics that technologies such as directed energy weapons could not even be properly evaluated for ABM use without at least another decade of testing.(11) In that year the emphasis of SDI planners moved away from long-term deployment of a multi-layered defence to the interim deployment of a "Phase I" system by the mid-1990s, based on thousands of space-based "Smart Rocks" which would attack missiles by crashing into them. Critics ridiculed this $115 billion

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(9) Quoted in "Strategic Defensive Arms Control: The ABM Treaty and Star Wars," (1989).

(10) Hampson (1989), p. 238.

(11) American Physical Society Study Group, Science and Technology of Directed Energy Weapons, American Physical Society, Woodbury, New York, 1981.

idea as a plan to simply "get something up there" and commit the government to future funding by forcing it to break the ABM restraints once and for all. A major redefinition of SDI occurred when its advocates began to talk about it enhancing (rather than replacing) deterrence by inserting a further measure of uncertainty into Soviet war plans, and played up the possibility of SDI research developing effective Anti-Satellite (ASAT) weapons.(12)

By 1988 SDI planners acknowledged that even a Phase I system could not be complete before the turn of the century, but added that the cost would now be $69 billion, some $46 billion less than the estimate provided just months before. In June, the Congressional Office of Technology Assessment issued another stinging report on SDI, agreeing with the American Physical Society that exotic technologies would not be effective for at least a decade. It also warned that even a Phase I deployment "would require an act of faith" that later phases would prove effective, and that "the long run ability of the Strategic Defense Initiative (SDI) to stay ahead of an ever-changing threat ...is questionable."(13) In a replay of the ABM debate of 20 years before, Senator Sam Nunn proposed that SDI focus on developing an Accidental Launch Protection System (ALPS). In a move that highlighted the discouraging public relations orientation of SDI, "Smart Rocks" became a smaller and smarter system, "Brilliant Pebbles." (One Democratic Senator complained about the "seemingly endless search for near-term deployment possibilities, silver bullets or brilliant pebbles or genius dust, whatever this year's fashion in SDI designer systems happens to be.")(14)

With the departure of Ronald Reagan, SDI lost its greatest supporter. Even the Reagan administration had not remained committed to

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(12) "Star Wars Gets Offensive Role: Satellite Killer," The New York Times, 27 November 1988 and Senator Tom Harkin, "Star Wars: A Trojan Horse for ASAT Weapons," in Arms Control Today, March 1989.

(13) Quoted in Arms Control and National Security (1989), p. 80.

(14) Gary Chapman, "Smart Rocks, Brilliant Pebbles, Genius Dust?" The Bulletin of the Atomic Scientists, November 1989.

the original concept of SDI, however. Frank Carlucci, Weinberger's replacement as Secretary of Defense, was quoted as admitting that Star Wars would not provide the "impenetrable shield" envisioned by the President. As political support for SDI waned, so did its funding. Although Congress had always trimmed the administration requests for funds, in 1990 for the first time SDI received less funding than it had in the previous year (see Figure 2).

With the arrival of the Bush administration, SDI's prospects looked dimmer still. Brent Scowcroft, a known SDI critic, became Bush's National Security Advisor, and according to John Tower, Bush's first choice as Secretary of Defense, "the Bush administration did not consider it possible to 'devise an umbrella that can protect the entire American population from nuclear incineration'."(15) In his National Security Directive 14 on ICBM Modernization and Strategic Defense Initiative, signed on 14 June 1989, Bush called for the development of "options for strengthening deterrence and stability through the deployment of strategic defences based on advanced technologies." The irony of identifying SDI's role as being to enhance deterrence is that the initiative has now become merely one of the many US programs designed to do this, rather than being a unique answer to the threat of nuclear weapons. As five members of the Senate Defense Appropriations Subcommittee pointed out in a letter to Sam Nunn

> The administration's explicit, and long overdue rejection of SDI's original goal of an "astrodome" defense that substitutes for deterrence should alter the way the program is viewed. SDI is now only another means of achieving deterrence... We do not believe the Congress should provide any additional increase in funding for SDI until it can identify what gap in future strategic deterrence SDI would fill.(16)

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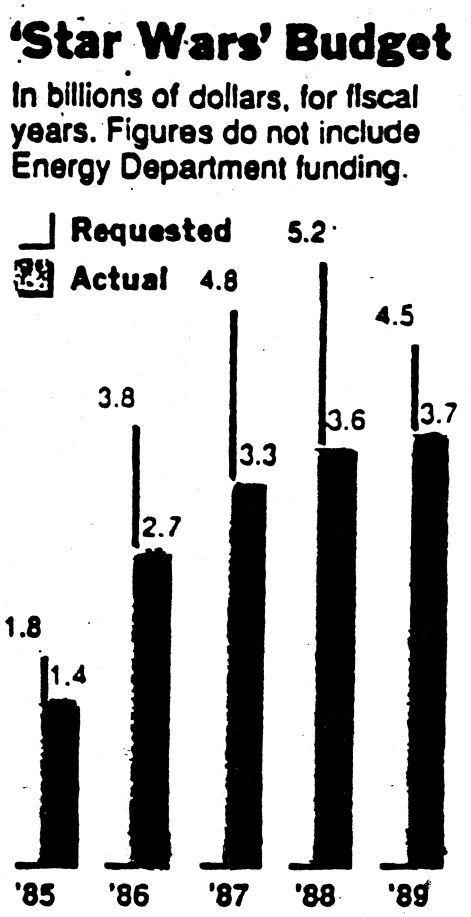
(15) "Tower Declares Star Wars Shield Can't Be Complete," The New York Times, 27 January 1989.

(16) Bruce MacDonald, "Lost in Space: SDI Struggles Through its Sixth Year," Arms Control Today, September 1989, p. 22.

FIGURE 2



1990 funding is 3.5 billion

Source: Department of Defense. The New York Times, Jan. 27, 1989.

CONCLUSION

While advocates of SDI accuse its critics of forgetting that it is a research program rather than a weapons system, and that you can't criticize something that does not yet exist, in fact the essence of the SDI debate was resolved 20 years ago in the ABM debate. Paul Nitze, President Reagan's senior arms control advisor, outlined three basic requirements for a strategic defence system: it must be 1) militarily effective 2) survivable against Soviet attack and 3) "cost effective at the margin," meaning that the United States must be able to maintain it more cheaply than the Soviet Union could increase its forces or deploy countermeasures to overcome it.(17) SDI realistically promised none of these.

As Dr. Wolfgang Panofsky, an internationally recognized physicist and longtime advisor to Presidents Eisenhower, Kennedy and Carter, put it in 1987,

> I think there have been advances since 1972 that have changed the picture. The largest advances have been in computing, data processing, sensor technology, the emergence of the free electron laser, and the possibility, at least, of a nuclear-pumped X-ray laser... However, the main point about these advances is that none of them deserve the term "breakthrough." They've been evolutionary. Moreover, all these evolutions have relevance both to offensive as well as defensive technologies...in my view, there is no evidence that this evolution has tilted the balance against nuclear weapons delivered by ballistic missiles. In 1972, the basis of the treaty was a common realization by both parties that in the offense-defense balance regarding ballistic missiles, the offense clearly was ahead of the game in terms of any economic or technical criteria. I see no persuasive evidence from the technical situation...that the balance is different today.(18)

Given the ever-shifting nature of the SDI program, it is obvious that the original objectives of the program were believed by no one except perhaps

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(17) "Strategic Defenses and the ABM Treaty," in Arms Control and National Security (1989), p. 77.

(18) "A Physicist Evaluates SDI," Arms Control Today, June 1987.

President Reagan. While SDI is likely to remain a significant item in the U.S. defence budget for the near future (if only because of bureaucratic inertia), the program in the 1990s is likely to bear little resemblance to that outlined in 1983. Ultimately the fault of SDI was that it attempted to institute a technological "quick fix" for the problem of war in the nuclear age. As anyone who has thought about this issue realizes, however, the root of the problem still lies with human beings and not with the weapons they have invented.

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APPENDIX

Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems

Signed at Moscow May 26, 1972
Ratification advised by U.S. Senate August 3, 1972
Ratified by U.S. President September 30, 1972
Proclaimed by U.S. President October 3, 1972
Instruments of ratification exchanged October 3, 1972
Entered into force October 3, 1972

The United States of America and the Union of Soviet Socialist Republics, hereinafter referred to as the Parties,

Proceeding from the premise that nuclear war would have devastating consequences for all mankind,

Considering that effective measures to limit anti-ballistic missile systems would be a substantial factor in curbing the race in strategic offensive arms and would lead to a decrease in the risk of outbreak of war involving nuclear weapons,

Proceeding from the premise that the limitation of anti-ballistic missile systems, as well as certain agreed measures with respect to the limitation of strategic offensive arms, would contribute to the creation of more favorable conditions for further negotiations on limiting strategic arms,

Mindful of their obligations under Article VI of the Treaty on the Non-Proliferation of Nuclear Weapons,

Declaring their intention to achieve at the earliest possible date the cessation of the nuclear arms race and to take effective measures toward reductions in strategic arms, nuclear disarmament, and general and complete disarmament,

Desiring to contribute to the relaxation of international tension and the strengthening of trust between States,

Have agreed as follows:

Article I

1. Each party undertakes to limit anti-ballistic missile (ABM) systems and to adopt other measures in accordance with the provisions of this Treaty.

2. Each Party undertakes not to deploy ABM systems for a defense of the territory of its country and not to provide a base for such a defense, and not to deploy ABM systems for defense of an individual region except as provided for in Article III of this Treaty.

Article II

1. For the purpose of this Treaty an ABM system is a system to counter strategic ballistic missiles or their elements in flight trajectory, currently consisting of:

(a) ABM interceptor missiles, which are interceptor missiles constructed and deployed for an ABM role, or of a type tested in an ABM mode;

(b) ABM launchers, which are launchers constructed and deployed for launching ABM interceptor missiles; and

(c) ABM radars, which are radars constructed and deployed for an ABM role, or of a type tested in an ABM mode.

2. The ABM system components listed in paragraph 1 of this Article include those which are:

(a) operational;
(b) under construction;
(c) undergoing testing;
(d) undergoing overhaul, repair or conversion; or
(e) mothballed.

Article III

Each Party undertakes not to deploy ABM systems or their components except that:

(a) within one ABM system deployment area having a radius of one hundred and fifty kilometers and centered on the Party's national capital, a Party may deploy: (1) no more than one hundred ABM launchers and no more than one hundred ABM interceptor missiles at launch sites, and (2) ABM radars within no more than six ABM radar complexes, the area of each complex being circular and having a diameter of no more than three kilometers; and

(b) within one ABM system deployment area having a radius of one hundred and fifty kilometers and containing ICBM silo launchers, a Party may deploy: (1) no more than one hundred ABM launchers and no more than one hundred ABM interceptor missiles at launch sites, (2) two large phased-array ABM radars comparable in potential to corresponding ABM radars operational or under construction on the date of signature of the Treaty in an ABM system deployment area containing ICBM silo launchers, and (3) no more than eighteen ABM radars each having a potential less than the potential of the smaller of the above-mentioned two large phased-array ABM radars.

Article IV

The limitations provided for in Article III shall not apply to ABM systems or their components used for development or testing, and located within current or additionally agreed test ranges. Each Party may have no more than a total of fifteen ABM launchers at test ranges.

Article V

1. Each Party undertakes not to develop, test, or deploy ABM systems or components which are sea-based, air-based, space-based, or mobile land-based.

2. Each Party undertakes not to develop, test, or deploy ABM launchers for launching more than one ABM interceptor missile at a time from each launcher, not to modify deployed launchers to provide them with such a capability, not to develop, test, or deploy automatic or semi-automatic or other similar systems for rapid reload of ABM launchers.

Article VI

To enhance assurance of the effectiveness of the limitations on ABM systems and their components provided by the Treaty, each Party undertakes:

(a) not to give missiles, launchers, or radars, other than ABM interceptor missiles, ABM launchers, or ABM radars, capabilities to counter strategic ballistic missiles or their elements in flight trajectory, and not to test them in an ABM mode; and

(b) not to deploy in the future radars for early warning of strategic ballistic missile attack except at locations along the periphery of its national territory and oriented outward.

Article VII

Subject to the provisions of this Treaty, modernization and replacement of ABM systems or their components may be carried out.

Article VIII

ABM systems or their components in excess of the numbers or outside the areas specified in this Treaty, as well as ABM systems or their components prohibited by this Treaty, shall be destroyed or dismantled under agreed procedures within the shortest possible agreed period of time.

Article IX

To assure the viability and effectiveness of this Treaty, each Party undertakes not to transfer to other States, and not to deploy outside its national territory, ABM systems or their components limited by this Treaty.

Article X

Each Party undertakes not to assume any international obligations which would conflict with this Treaty.

Article XI

The Parties undertake to continue active negotiations for limitations on strategic offensive arms.

Article XII

1. For the purpose of providing assurance of compliance with the provisions of this Treaty, each Party shall use national technical means of verification at its disposal in a manner consistent with generally recognized principles of international law.

2. Each Party undertakes not to interfere with the national technical means of verification of the other Party operating in accordance with paragraph 1 of this Article.

3. Each Party undertakes not to use deliberate concealment measures which impede verification by national technical means of compliance with the provisions of this Treaty. This obligation shall not require changes in current construction, assembly, conversion, or overhaul practices.

Article XIII

1. To promote the objectives and implementation of the provisions of this Treaty, the Parties shall establish promptly a Standing Consultative Commission, within the framework of which they will:

(a) consider questions concerning compliance with the obligations assumed and related situations which may be considered ambiguous;

(b) provide on a voluntary basis such information as either Party considers necessary to assure confidence in compliance with the obligations assumed;

(c) consider questions involving unintended interference with national technical means of verification;

(d) consider possible changes in the strategic situation which have a bearing on the provisions of this Treaty;

(e) agree upon procedures and dates for destruction or dismantling of ABM systems or their components in cases provided for by the provisions of this Treaty;

(f) consider, as appropriate, possible proposals for further increasing the viability of this Treaty; including proposals for amendments in accordance with the provisions of this Treaty;

(g) consider, as appropriate, proposals for further measures aimed at limiting strategic arms.

2. The Parties through consultation shall establish, and may amend as appropriate, Regulations for the Standing Consultative Commission governing procedures, composition and other relevant matters.

Article XIV

1. Each Party may propose amendments to this Treaty. Agreed amendments shall enter into force in accordance with the procedures governing the entry into force of this Treaty.

2. Five years after entry into force of this Treaty, and at five-year intervals thereafter, the Parties shall together conduct a review of this Treaty.

Article XV

1. This Treaty shall be of unlimited duration.

2. Each Party shall, in exercising its national sovereignty, have the right to withdraw from this Treaty if it decides that extraordinary events related to the subject matter of this Treaty have jeopardized its supreme interests. It shall give notice of its decision to the other Party six months prior to withdrawal from the Treaty. Such notice shall include a statement of the extraordinary events the notifying Party regards as having jeopardized its supreme interests.

Article XVI

1. This Treaty shall be subject to ratification in accordance with the constitutional procedures of each Party. The Treaty shall enter into force on the day of the exchange of instruments of ratification.

2. This Treaty shall be registered pursuant to Article 102 of the Charter of the United Nations.

DONE at Moscow on May 26, 1972, in two copies, each in the English and Russian languages, both texts being equally authentic.

FOR THE UNITED STATES OF AMERICA	**FOR THE UNION OF SOVIET SOCIALIST REPUBLICS**
RICHARD NIXON	**L. I. BREZHNEV**
President of the United States of America	*General Secretary of the Central Committee of the CPSU*

APPENDIX B

Protocol to the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems

Signed at Moscow July 3, 1974
Ratification advised by U.S. Senate November 10, 1975
Ratified by U.S. President March 19, 1976
Instruments of ratification exchanged May 24, 1976
Proclaimed by U.S. President July 6, 1976
Entered into force May 24, 1976

The United States of America and the Union of Soviet Socialist Republics, hereinafter referred to as the Parties,

Proceeding from the Basic Principles of Relations between the United States of America and the Union of Soviet Socialist Republics signed on May 29, 1972,

Desiring to further the objectives of the Treaty between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems signed on May 26, 1972, hereinafter referred to as the Treaty,

Reaffirming their conviction that the adoption of further measures for the limitation of strategic arms would contribute to strengthening international peace and security,

Proceeding from the premise that further limitation of anti-ballistic missile systems will create more favorable conditions for the completion of work on a permanent agreement on more complete measures for the limitation of strategic offensive arms,

Have agreed as follows:

Article I

1. Each Party shall be limited at any one time to a single area out of the two provided in Article III of the Treaty for deployment of anti-ballistic missile (ABM) systems or their components and accordingly shall not exercise its right to deploy an ABM system or its components in the second of the two ABM system deployment areas permitted by Article III of the Treaty, except as an exchange of one permitted area for the other in accordance with Article II of this Protocol.

2. Accordingly, except as permitted by Article II of this Protocol: the United States of America shall not deploy an ABM system or its components in the area centered on its capital, as permitted by Article III(a) of the Treaty, and the Soviet Union shall not deploy an ABM system or its components in the deployment area of intercontinental ballistic missile (ICBM) silo launchers as permitted by Article III(b) of the Treaty.

Article II

1. Each Party shall have the right to dismantle or destroy its ABM system and the components thereof in the area where they are presently deployed and to deploy an ABM system or its components in the alternative area permitted by Article III of the Treaty, provided that prior to initiation of construction, notification is given in accord

with the procedure agreed to in the Standing Consultative Commission, during the year beginning October 3, 1977 and ending October 2, 1978, or during any year which commences at five year intervals thereafter, those being the years for periodic review of the Treaty, as provided in Article XIV of the Treaty. This right may be exercised only once.

2. Accordingly, in the event of such notice, the United States would have the right to dismantle or destroy the ABM system and its components in the deployment area of ICBM silo launchers and to deploy an ABM system or its components in an area centered on its capital, as permitted by Article III(a) of the Treaty, and the Soviet Union would have the right to dismantle or destroy the ABM system and its components in the area centered on its capital and to deploy an ABM system or its components in an area containing ICBM silo launchers, as permitted by Article III(b) of the Treaty.

3. Dismantling or destruction and deployment of ABM systems or their components and the notification thereof shall be carried out in accordance with Article VIII of the ABM Treaty and procedures agreed to in the Standing Consultative Commission.

Article III

The rights and obligations established by the Treaty remain in force and shall be complied with by the Parties except to the extent modified by this Protocol. In particular, the deployment of an ABM system or its components within the area selected shall remain limited by the levels and other requirements established by the Treaty.

Article IV

This Protocol shall be subject to ratification in accordance with the constitutional procedures of each Party. It shall enter into force on the day of the exchange of instruments of ratification and shall thereafter be considered an integral part of the Treaty.

DONE at Moscow on July 3, 1974, in duplicate, in the English and Russian languages, both texts being equally authentic.

For the United States of America:

RICHARD NIXON

President of the United States of America

For the Union of Soviet Socialist Republics:

L. I. BREZHNEV

General Secretary of the Central Committee of the CPSU