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## **THE STRATEGIC DEFENSE INITIATIVE: MYTH AND REALITY**

### **INTRODUCTION**

**P**erhaps more than any other defense program in history, the Strategic Defense Initiative – or SDI – is beset with myths, misunderstandings, and outright distortions. Recent news reports, for example, relying on leaked and incomplete information, questioned SDI's technical feasibility, even though real progress in SDI testing continues to be made and even though the veracity of these news reports is refuted by well-respected scientists and even some critics of SDI.

SDI is a massive undertaking. Its potential for protecting the United States from nuclear attack is enormous. Enormous too are the decisions required to deploy strategic defenses. As such, SDI warrants intensive official and public scrutiny. Such scrutiny must be conducted with facts and data, not myths and politically motivated allegations. Responsible policy makers and commentators, therefore, must see through and dismiss the myths when they begin drawing their conclusions about SDI.

### **THE SEVEN MYTHS OF SDI**

There are currently seven prevailing myths about SDI. They appear daily in the press, are manufactured and spread primarily by organized SDI opponents such as the Union of Concerned Scientists, a liberal pressure group. As are most myths, those about SDI are models of simplicity, presenting only facts that support the myth, while ignoring evidence to the contrary.

## **Myth #1: SDI will be unworkable because of limitations in data processing and sensor technologies.**

This charge arose from misleading and erroneous press coverage of a June 1988 technical report on SDI by the Office of Technology Assessment (OTA), a research arm of the Congress.<sup>1</sup> The OTA report concludes that the possibility of a "catastrophic failure" of a deployed strategic defense system is a "significant probability," because the computer software needed to manage, command, and control the system would be unreliable and untrustworthy. Some press reports erroneously concluded that a "significant probability" of failure is the same as saying that the SDI system was "likely" to fail.<sup>2</sup>

It is not. The directors of the Office of Technology Assessment (John Gibbons) and the Strategic Defense Initiative Organization (Lt. General James Abrahamson) made this clear. In an unprecedented joint letter to the press, they stressed that "'significant probability' is not the same as 'likelihood.'"<sup>3</sup> The OTA Report used the phrase "significant probability" to mean a theoretical or statistical probability, not a likely probability.

To the nonexpert, this may seem like meaningless hair-splitting. But it is common usage for professional statisticians. OTA Director Gibbons said in the open letter that this was the OTA's meaning. What the OTA Report really said is that, although failure in statistical terms is a "probability," it is not likely to happen; failure of the SDI system is theoretically possible, but its chances are remote. A minimal risk of failure, of course, is routinely accepted for all weapon systems, including strategic nuclear missiles. It is unreasonable to apply to SDI a higher standard for measuring the probability of failure than is applied to other U.S. weapons; it seems particularly unreasonable to apply a higher standard to a defensive weapon than to an offensive weapon carrying enormous nuclear punch.

## **Myth #2: If SDI is not perfect, it is not worth deploying.**

This myth sets up a false standard by which to evaluate strategic defense.<sup>4</sup> Critics of SDI often charge that only a perfect strategic defense system capable of intercepting every single incoming warhead would be worth the cost. They insist that even a single warhead penetrating the strategic defense shield would cause tremendous damage and loss of life. Why then, they ask, should the U.S. spend billions of dollars for strategic defense if it would allow the devastation caused by even a single exploding nuclear warhead?

Setting up a standard based on false expectations may be a good debating tactic, but it is poor way to make a decision about an issue as important as strategic defense. For one thing, it assumes that the current situation of total vulnerability to attacks by literally thousands of nuclear warheads is somehow better than one in which strategic defenses would destroy many incoming warheads. Yet even a limited strategic defense system

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1 R. Jeffrey Smith, "SDI Faulted in 2-Year Hill Study," *The Washington Post*, April 24, 1988; Warren E. Leary, "Star Wars' Runs into New Criticism," *The New York Times*, April 25, 1988.

2 *Ibid.*

3 Letter to the Editor, *The Washington Post*, May 5, 1988.

4 Lt. Gen. James A. Abrahamson, "Regaining the High Ground," *American Legion Magazine*, May 1988, p. 39.

capable of intercepting 30 percent of the warheads in a massive Soviet nuclear strike — the minimum percentage the Joint Chiefs of Staff believes is required for the U.S. strategic defense system to help deter nuclear war — would save millions more lives than would no defenses.

For another thing, setting up the standard of perfect protection ignores the fact that even a partial deployment of SDI would increase U.S. deterrence of a Soviet attack. Soviet military planners would be uncertain that their missiles would reach intended military targets. And if Moscow did attempt to disarm the U.S. nuclear force with a nuclear attack, it would fail when U.S. strategic defenses protecting the missiles would enable the U.S. to retaliate. Facing such a possibility, Soviet leaders would be more likely to conclude than they now are that an attack on the U.S. would be too risky. They thus would not attempt it. This is the purpose of deterrence.

The extent to which SDI could save lives and enhance deterrence should be the standard by which SDI is judged, not whether it will provide 100 percent perfect protection against all threats under every conceivable circumstance.

### **Myth #3: Counteracting SDI would be cheap, quick, and easy.**

SDI critics often contradict themselves. First they argue that deploying effective strategic defenses is an impossible technical task and that it is too costly. Then they contend that countermeasures to SDI — whether massive numbers of warheads to overwhelm the defense or superfast booster rockets that move so rapidly they cannot be destroyed by the U.S. interceptors — will be not only technically easy to develop and deploy but also cheap. The critics' skepticism about SDI's cost and technical feasibility is suspended when they evaluate the technical feasibility and cost of Soviet countermeasures to SDI. The fact is that developing countermeasures to foil the U.S. strategic defense system will be neither cheap, quick, nor easy.<sup>5</sup>

Example: the so-called "fast-burn booster," alleged by critics to be the most devastating countermeasure to SDI. The fast-burn booster is a specially designed intercontinental ballistic missile (ICBM) that could reach full speed in about 60 to 100 seconds, instead of the five minutes normally required by today's ICBMs.<sup>6</sup> Neither the U.S. nor the Soviet Union have such a missile in their arsenals, but could theoretically build one. This fast-burn booster, it is said, could evade U.S. space-based X-ray lasers, neutral particle beams, or rockets fired from orbiting satellites. The critics contend that the fast-burn booster moves too fast for SDI sensors to track, and because it burns out at lower altitudes than conventional rockets, it dispenses its warheads not in the vacuum of space where lasers or satellite-based rockets can destroy them relatively easily, but inside the earth's atmosphere where these space weapons cannot penetrate.

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<sup>5</sup> *Ibid.*

<sup>6</sup> Joint Opening Statement of Lawrence Livermore National Laboratory scientist Lawrence Lowell Wood and Los Alamos Laboratory scientist Gregory Canavan Before the House Republican Research Committee, May 19, 1987, in *Perspectives on the American Physical Society Directed Energy Report* (Washington, D.C.: Strategic Defense Initiative Organization Directed Energy Office, May 1987), p. 6.

Countering SDI with fast-burn boosters, however, would be expensive, and technically and tactically very difficult.<sup>7</sup> If the booster rocket, for example, dispenses its many warheads (or reentry vehicles) at lower altitudes to evade space-based lasers or rocket interceptors, its lightweight decoys (such as balloons or chaff) used to confuse U.S. tracking systems will be slowed down by the atmosphere's heavier air, while the real warheads will continue moving along largely unaffected. U.S. velocity-tracking sensors deployed in space, therefore, will find it easy to discriminate between decoys and real warheads, thereby making the task of destroying the real warheads much easier and cheaper.

Faced with this problem, the Soviets would have no choice but to dispense their warheads from their booster rockets at higher altitudes. But this would put them well within range of U.S. satellites armed with space rockets or X-ray lasers and neutral particle beam weapons. Other lasers, meanwhile, could strike at the booster rocket from the minute it left the ground. Free electron and chemical lasers, for example, could penetrate the atmosphere down to ground level.

Even if the Soviets decided they wanted fast-burn boosters, it would cost them billions of dollars to redesign their arsenal of nuclear missiles to accommodate them. These funds might have to be diverted from other programs for offensive forces. It would also take a very long time to do, which could provide the U.S. with an opportunity to develop new technologies, tactics, and systems to foil the fast-burn booster and other Soviet countermeasures. To reduce their weight, moreover, fast-burn boosters would have to carry fewer warheads. This would make the job of the defense easier and would reduce the threat posed by individual Soviet missiles.

#### **Myth #4: SDI costs too much.**

Critics of SDI claim that deploying strategic defenses will cost a trillion dollars — even more. There is no, nor ever has been a, basis for this alarmist figure. It seems to have emerged from the faulty calculations of Carter Administration Secretary of Defense Harold Brown, who admitted using a simplistic "rule of thumb" — multiplying the research and development costs of the program by ten — to determine its final costs.<sup>8</sup> This wild, trillion dollar, unsubstantiated estimate has then been treated as solid fact by the Union of Concerned Scientists (UCS) and other organizations opposed to the SDI program.

Brown's formula for estimating the costs of SDI was arbitrary and exceedingly primitive. No serious budget analyst would use it. It is not based on detailed analysis of SDI, nor does it take into consideration the unique nature of the SDI program as an exploratory research effort, examining a variety of different technologies.<sup>9</sup>

It is impossible at this point, therefore, to estimate exactly how much deployed strategic defenses will cost. Research and development are continuing. Until some decision is

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<sup>7</sup> Wood and Canavan, *op. cit.*, p. 6.

<sup>8</sup> Grant Loeb, "Strategic Defense: How Much Will It Really Cost," Heritage Foundation *Backgrounder* No. 607, October 2, 1987, p. 4.

<sup>9</sup> *Ibid.*

reached on the specific kind of systems to build, there will be uncertainty about the final cost.

Yet some estimates are possible. Since March 1983, the Pentagon has spent \$8 billion on SDI research.<sup>10</sup> Estimates for costs of a first phase deployment of strategic defenses are put at between \$12 billion to \$15 billion annually over ten years.<sup>11</sup> This is a little over 1 percent of the annual federal budget. It is also only one-tenth the amount of the total cost estimated by SDI critics.

To put the cost of SDI into perspective, compare American consumers' expenditures of \$20 billion a year on soft drinks, \$31 billion a year on tobacco, and \$40 billion a year on telephones and telegraphs.<sup>12</sup> This makes \$12 billion to \$15 billion a year for a decade seem a very low price for protecting Americans from nuclear attack.

**Myth #5: If SDI works, it will destabilize the superpower balance and will escalate the "arms race."**

If the U.S. deploys strategic defenses, this argument goes, Moscow will respond by building more long-range ballistic missiles, bombers, and cruise missiles to overwhelm U.S. antimissile defenses with ever greater numbers of offensive weapons. Another argument warns that U.S. work on a strategic defense system would terrify the Soviets into suddenly attacking the U.S. with nuclear weapons. Moscow would do this, it is said, because Moscow would fear that, once the U.S. had its strategic defense shield, the U.S. could hide behind it after launching a preemptive strike on the Soviet Union. In either case, critics contend that deployed U.S. defenses would destabilize the balance of power and make nuclear war more likely.

These arguments are based on false assumptions. The first is the belief that the current situation of being totally vulnerable to nuclear attack is more stable than a situation in which both sides possess some strategic defenses. The U.S.-Soviet strategic relationship becomes unstable only if one side or the other has a strategic defense monopoly, or if one side's rate of defense deployments significantly outpaces that of the other side. But the Reagan Administration repeatedly has told the Soviet Union that the U.S. desires no unilateral advantage from SDI, that it is willing to discuss a negotiated timetable for mutual deployment, that it would even consider sharing some of the technical findings, and that it would consider reducing strategic offensive forces as defenses are deployed.

Rather than an obstacle, SDI could be the basis for a genuine strategic stability. The most stable strategic environment would be one in which the numbers of ballistic missiles, bombers, cruise missiles, and their warheads are cut sharply by an arms control agreement and strategic defenses are deployed to defend against those weapons that remain. Strategic defenses also would help the U.S. and USSR protect themselves against cheating by the

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10 Abrahamson, *op. cit.*, p. 40.

11 Loebs, *op. cit.*, p. 1.; R. Jeffrey Smith, "Pentagon Scales Back SDI Goals," *The Washington Post*, March 27, 1988.

12 *Statistical Abstract of the United States* (Washington, D.C.: U.S. Department of Commerce, Bureau of the Census, 1988), p. 422; Abrahamson, *op. cit.*, p. 40.

other on an arms control agreement, since they could be used as defense against hidden weapons. This is what the Reagan Administration has been seeking in the strategic arms control talks with the Soviets in Geneva.

Another false assumption of the "destabilization" charge against SDI is that the U.S. is somehow upsetting the strategic balance by unilaterally launching a strategic defense program. This is simply untrue. The Soviet Union has had its own strategic defense program for two decades. It includes not only traditional antiballistic missile systems and technologies, with the world's only operational antiballistic missile system, but the same kind of research on lasers and other advanced technologies that SDI would employ. In the past decade Moscow has spent the equivalent of \$200 billion on strategic defenses of all kinds, including air defense systems.<sup>13</sup>

If Soviet policy toward the U.S. SDI program and the 1972 Anti-Ballistic Missile Treaty is examined closely, it becomes clear that Moscow does not want to ban strategic defenses permanently. All Moscow seeks is to delay indefinitely deployments of strategic defenses. Moscow wants to do this, apparently, by slowing the pace of research and development of the U.S. SDI program.

#### **Myth #6: SDI and arms control are Incompatible.**

The Soviet Union and some U.S. critics of SDI claim that to deploy strategic defenses would kill chances of reducing strategic offensive arms in an arms control agreement. They argue that SDI should be a bargaining chip to be cashed in for deep reductions in strategic offensive arms, such as long-range ballistic missiles and bombers. The choice is said to be between SDI or arms control, because to have one is to sacrifice the other.

This is a false choice. SDI and arms control are, in fact, partners in creating strategic stability. Reducing offensive arms with a verifiable strategic arms reductions agreement would greatly simplify the task of both U.S. and Soviet strategic defense systems because each side's defense system would face fewer offensive weapons. Thus, with arms control, strategic defenses become cheaper, more effective, hence more capable of deterring the use of nuclear weapons in the first place.

The critics have got it backwards. The best remedy for today's strategic forces imbalance is not to give away the option of strategic defenses in return for reductions in strategic offensive forces, but rather to seek a treaty limiting offensive arms while agreeing on the pace and kinds of strategic defense deployments.

The schedule for strategic defense deployments and offensive arms reductions could be synchronized by an arms control treaty encompassing both offensive and defensive arms. The arms control agreement could allow each side to keep a small ballistic missile force, plus a larger force of cruise missiles and long-range strategic bombers as an interim offensive deterrent force. As U.S. and Soviet strategic defense systems became more effective, the offensive systems could be reduced further by additional agreements.

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<sup>13</sup> Abrahamson, *op. cit.*, p. 40.

Arms control talks also could concentrate on limiting countermeasures to strategic defense. The purpose of arms control should be not just to reduce the size of strategic offensive nuclear arsenals, but to make strategic defenses more effective, thus strengthening stability and reducing the risk of nuclear war.

**Myth #7: Deploying strategic defenses in stages abandons the long-term goal of comprehensive defense.**

SDI critics charge that the Reagan Administration is cutting back on its long-term commitment to building a comprehensive strategic defense. They point to recent Department of Defense actions suggesting plans to deploy a near-term strategic defense system that will protect missiles and strategic command centers, rather than people and large tracts of U.S. territory.

The first Pentagon action mentioned by critics is a decision reached last year by the Joint Chiefs of Staff (JCS) that U.S. security required a first phase strategic defense system capable of destroying at least 30 percent of incoming Soviet warheads.<sup>14</sup> The second is a report by the Defense Science Board, a private science advisory panel for the Pentagon, recommending that a first phase SDI defense be done in steps rather than in a single action.<sup>15</sup>

Whether the Reagan Administration has given up on the goal of long-term comprehensive defenses is unknown. Undoubtedly repeated cuts of the SDI budget by Congress will slow the SDI program, delaying the day when the full-scale system will be completed. But there is no basis in fact or reality to charge that merely deciding to deploy defenses in phases, where each stage builds on the other and becomes more effective as more systems are added, is tantamount to abandoning the long-term goal of comprehensive defenses.

Press reports on plans to deploy strategic defenses in phases reveal a misunderstanding of what it actually means to proceed by phases.<sup>16</sup> From the start, experts have known that strategic defenses would have to be built in phases or single steps of some kind. No weapon system, including such U.S. strategic offensive forces as ballistic missiles and bombers, ever

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14 See Smith, "Pentagon Scales Back SDI Goals," *op. cit.*, and by the same author, "Joint Chiefs' Goal on SDI One-Sided," *The Washington Post*, March 27, 1988.

15 *Report of the Defense Science Board Task Force: Subgroup on Strategic Air Defense (SDI Milestone Panel)* (Washington, D.C.: Office of the Under Secretary of Defense for Acquisition, May 1988). The Defense Science Board, known unofficially as the SDI Milestone Panel, is an independent committee that monitors the technical development of the SDI program for the Secretary of Defense and the Under Secretary of Defense for Acquisition. Its recommendations are not binding on the Secretary of Defense, but are merely suggestions made by private citizens from the defense community. The panel is chaired by Robert R. Everett, President Emeritus of the MITRE Corporation.

16 See *Post* articles by R. Jeffrey Smith, *op. cit.*

have been fielded in their entirety in a single action. They have been deployed in phases, built up over time, and expanded as new technology became available.

This year's *Report to Congress on the Strategic Defense System Architecture* by the Pentagon's Strategic Defense Initiative Organization states explicitly that "The phased deployment of the Strategic Defense Systems (SDS) has been conceived as the most reasonable means to achieve the levels of defense contemplated by the President's 1983 direction."<sup>17</sup> Press reports on the JCS statement on military requirements for phase one SDI misinterpreted the statement as meaning that the Reagan Administration had abandoned the long-term goal of deploying the most comprehensive defense possible. All that the JCS statement says is that each phase of the strategic defense deployment should have military merit in itself — or be capable of defending U.S. strategic forces from a disarming first strike by Soviet nuclear forces. It makes good military sense to ensure that each deployment phase improves U.S. security in its own right.

The Defense Science Board Report, meanwhile, is only a recommendation by a private group. It does not represent official policy. What is more, the Report merely recommended that near-term deployments take place in small steps, each having its own military merit and contributing, in some cases, to other military missions (such as improving early warning capabilities against nuclear attack). Again, this does not mean that strategic defenses cannot be improved as such advanced technologies as lasers and neutral particle beams become more mature.

There is thus nothing about phased deployment of SDI that requires abandoning the long-term goal of a full-scale strategic defense system. If this goal is abandoned, it will be a political decision resulting most likely from congressional budget cuts of SDI, not a technical one dictated by the requirements of deploying strategic defenses in steps.

## CONCLUSION

The U.S. is embarking on a new strategic era. Advances in technology are making it possible for the first time in history to develop and eventually deploy weapons capable of effectively and efficiently destroying ballistic missiles in flight. At the same time the U.S. is facing an increasing threat from Soviet nuclear weapons. Moscow is improving its capability to launch a disarming first strike against U.S. strategic forces, and is amassing the arms that enable it to wage a prolonged nuclear conflict with the U.S.

While the U.S. thus faces new threats to its security, it has new opportunities to deal with them. The Strategic Defense Initiative offers the hope of harnessing the technological promise of the American people to help deter Soviet nuclear attacks.

**Stabilizing the Strategic Relationship.** To determine whether SDI can fulfill this promise, the American people and policy makers need to be able to distinguish between myth and reality. Misconceptions cloud the debate over SDI and prevent a fair and open

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<sup>17</sup> *Report to Congress on the Strategic Defense System Architecture* (Washington, D.C.: Strategic Defense Initiative Organization, January 1988), p.3.



discussion about the merits of the program. There is no technical evidence whatsoever to suggest that a strategic defense system is likely to suffer a "catastrophic failure" because of deficiencies in computer software. SDI need not be perfect to have military value and to help deter nuclear attacks by the Soviet Union. Soviet countermeasures to neutralize U.S. strategic defenses would not be cheap, quick, and easy. Deploying a first phase SDI system in the 1990s would cost between \$12 billion and \$15 billion annually for a decade, a little over 1 percent of the annual federal budget, and only one-tenth the amount of the total cost estimated by SDI critics. But not only would strategic defenses help stabilize the strategic relationship between the U.S. and USSR, they could join with arms reductions agreements to end the arms race in such strategic offensive nuclear forces as ballistic missiles.

SDI and arms control are not incompatible. They are partners in reducing the risk of nuclear war. The U.S. need not choose between SDI or an arms agreement reducing strategic offensive nuclear forces. The U.S. can, and should, choose both.

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