

ARTICLE APPEARED
ON PAGE 22CHRISTIAN SCIENCE MONITOR
6 February 1986

'Star wars' and arms control

The US faces several policy choices over how to proceed with President Reagan's Strategic Defense Initiative, a defensive system against incoming missile attacks. These options give various degrees of importance to arms control. But will the final decision, whatever it is, promote stability or increase the risk of nuclear destruction?

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STAR wars could be the greatest impetus to arms control in a dozen years.

Or it could be the greatest barrier.

It all depends on what happens next.

So far, President Reagan's Strategic Defense Initiative (SDI, or "star wars") has been a conspicuous incentive to arms control. Judging from the vehemence of Soviet attacks on it, it seems to be the major prod that got the Soviets back to the negotiating table after they stalked out in 1983.

At the same time, though, the Soviets are insisting that no agreement on deep cuts in nuclear offensive weapons is possible unless the United States gives up any notion of a space- and land-based defense against Soviet intercontinental missiles.

And what is the lesson of this?

To hard-liners in the Reagan administration — primarily Pentagon civilians and Air Force officers directing the SDI program — the Soviet opposition proves that SDI is a good thing and should at all costs be preserved intact. To moderates in the administration, it shows that SDI could be a valuable lever to extract — for the first time in the nuclear age — major reductions in nuclear weapons rather than just ceilings on huge existing arsenals.

To sort out the conflicting points of view, several issues must be addressed:

- What SDI options are technically feasible?
- What would be the effect of each of these on nuclear stockpiles and the threat of nuclear holocaust?
- What policy alternatives — or what combinations of SDI and arms control — are there?

Feasibility

In the four decades of the nuclear era, no physical "defense" against an enemy's attack

has thus far been possible, simply because of the scale of nuclear blast. The 10 or 30 or even 50 percent attrition of enemy planes that was effective in halting air raids in World War II has no meaning, when a leakage of even 1 percent of 10,000 strategic nuclear warheads through today's defense lines would bring the devastation of 1,000 Hiroshimas.

Thus, in the past four decades, prevention of nuclear war — "deterrence" — has replaced physical "defense" as the central military mission. And both sides' inhibitions against attacking the enemy have rested precisely on the knowledge that, since no defense is possible, any attack would call forth an intolerable reprisal.

Will technological advances change this and once again make physical defense conceivable?

Last fall's report on "Ballistic Missile Defense Technologies" by the Congressional Office of Technology Assessment (available for \$12 from the Superintendent of Documents, US Government Printing Office, Washington, D.C. 20402) tries to answer this question by assessing four potential SDI programs. These range from a modest protection of some land-based intercontinental ballistic missiles to a very ambitious defense of civilians in cities.

The last goal was what Mr. Reagan originally envisioned in his speech launching SDI in March 1983.

Administration spokesmen have since lowered their sights, however, and are now aiming for a system that would be only partially effective: strategic defense combined with targeted cuts of 50 percent in the superpowers' offensive weapons. Such a combination could increase Soviet uncertainty; it would not actually repulse an attack.

The OTA study says that the most modest option — that of defending some ICBMs — is highly feasible "with technologies now fairly

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well understood." A middle goal of protecting all major military installations would be much more demanding and would "require major technological advances." However, a defense "of all or nearly all US cities in the face of unconstrained Soviet nuclear offensive forces . . . does not appear feasible."

In brief, the reasons for this judgment run as follows:

A full defense is theoretically possible in terms of abstract physical laws — and even the needed gigantic "improvements in hardware performance" are conceivable. The likelihood is remote, however, of designing the 21st-century computer software that would be sufficiently fast, reliable, and survivable in a hostile environment to command the complex "star wars" hardware — especially since the 10 million lines of program instructions could never be coherently tested and debugged prior to the ultimate test of Armageddon itself. In addition, the necessary space-based sensors and other components tend to be more vulnerable to attack and countermeasures than are the missiles they would be trying to hit.

Some SDI advocates fault the OTA study for being too skeptical of SDI. Some SDI critics, on the other hand, are far more mistrustful of official optimism about SDI feasibility than is the OTA — especially in light of recent charges that key SDI tests have been contrived to produce positive results.

Impact of SDI on the nuclear standoff

Reagan's long-term goal for SDI is to inaugurate a new nuclear era in which "defense" would supplant "deterrence" to produce "assured security" instead of "assured destruction." But in the two decades or so that it will take to get from here to there, the stated American policy is in fact to shore up "deterrence" and rescue it from the uncertainty that befell it in the 1980s, when fixed land-based missiles became theoretically vulnerable to a "first strike."

Basically, the combination of multiple warheads on a single launcher and new accuracies gave the giant Soviet SS-18s and other missiles the capacity to destroy some 80 percent of American ICBMs in any surprise attack ("first strike") in which the American missiles stay put in their silos for half an hour. This was what the incoming Reagan administration decried as a "window of vulnerability."

As the new, highly accurate American Trident II and MX missiles now come on line, the Soviet Union in turn faces a "window of vulnerability." The US, too, is acquiring the theoretical capacity to destroy Soviet land-based missiles in a first strike — theoretical because everything would have to work perfectly in a mass firing never before tested, and in polar trajectories never before tested. The prospect is far more threatening to the Soviet Union in the late 1980s than it was to the US in the early '80s. The US has only a fourth of its strategic warheads in this vulnerable basing mode, but the Soviet Union has three-fourths of its strategic warheads in this mode.

Thus, even if the US lost all of its land-based missiles in a surprise attack, three-fourths of its arsenal would still survive on planes and submarines to retaliate against the Soviet Union. If the Soviet Union lost all of its land-based missiles in a surprise attack, however, only one-fourth of its arsenal would survive to retaliate.

Hence the Soviet objection that SDI threatens to overthrow, at least temporarily, the rough strategic equality of the past decade and a half and to restore the American superiority of the late 1960s. At the November superpower summit in Geneva, Communist Party General Sec-

retary Mikhail Gorbachev complained to Reagan that SDI, despite its billing as purely defensive, could be used for attack — and a few American scientists have in fact recently been speculating about a future offensive capability of SDI space lasers to ignite fire storms on earth.

More fundamentally, perhaps, Soviet specialists have been complaining that a "leaky" American strategic defense — the only feasible version at this point — makes sense only as an ominous guarantee of an American first strike. That is, a "leaky" American strategic defense that could not possibly protect the US against a Soviet attack with all 10,000 warheads might prove highly effective against only 2,500 residual Soviet warheads after an American first strike. Soviet retaliation — and Soviet ability to deter an initial American attack — would no longer be assured.

SDI enthusiasts would be quite happy with this disparity. And they argue that a final equilibrium in which both sides possessed extensive strategic defense would also be satisfactory, because the two superpowers would then cancel out each other's capabilities.

SDI critics, on the other hand, believe that this disparity would make the nuclear balance highly "unstable," especially in any crisis. The Soviets can be expected to imitate an American strategic defense (probably with a lag of some five to eight years). The result, critics say, would be a leaky strategic defense on both sides for another two decades or so. This balance would be highly "unstable," they believe, especially in any crisis. They reason that although partial defenses on both sides could not ward off an initial attack, whichever side shot first *could* ward off a weak "second strike" from the enemy. Whoever waited to fire second would suffer a disadvantage.

Presumably neither side would be so rash as to gamble on a premeditated surprise attack — but each would worry that the other might launch a panicky preemptive attack. In a crisis in which confrontation was escalating, with missiles poised, the pressures would be enormous to "use 'em or lose 'em." Trigger fingers would be itchy. The structure of the nuclear balance — which once would have permitted delay and allowed rational assessment of computer reports of an incoming attack — would increase nervousness and compel an instant decision to launch or not to launch.

based elements of an SDI battle management system were preprogrammed to react within three to five minutes of even an ambiguous signal — as they would have to be if they were to begin destroying enemy missiles in the crucial initial boost phase.

Thus, as the OTA study put it, "The motive for a Soviet decision to escalate a crisis to a central nuclear war might not be to gain a clear political or military objective: Instead, it may be to reduce what they fear could be a severe loss. In time of crisis we would not want the Soviet leadership to calculate that its least bad option was to start a nuclear war."

The most ardent SDI enthusiasts dismiss these concerns by arguing that American technological exuberance and dynamism so far outshine Soviet innovation that Washington can always stay ahead of Moscow and dominate confrontations.

The arms control options

The spectrum of SDI and arms control choices that now face the superpowers ranges from unhindered strategic defense and no arms control, a course American hard-liners could support, to offensive arms limits but no strategic defense whatever, the course Moscow currently espouses. In between are various potential trade-offs of mutual cuts in offensive weapons against mutual restraints on strategic defense.

- The first extreme — all SDI and no arms control — is the probable result if the US continues to insist that SDI is non-negotiable. In the most comprehensive unclassified study of Soviet reactions to date (an Adelphi Paper of the International Institute for Strategic Studies), Stephen Meyer of the Massachusetts Institute of Technology argues that the Soviets will never agree to deep offensive cuts unless SDI is

curtailed. This impasse would lead to open-ended proliferation of offensive systems by both sides as the cheapest and quickest foil to the adversary's developing strategic defense.

Hard-liners would view such an outcome with equanimity. They argue that the US would win this race, since the US is almost twice as rich and leads the Soviet Union in almost all categories of technology important for nuclear weapons and defense (according to Pentagon listings).

The moderates in Washington — primarily some activist ex-officials, the State Department, and, on occasion, members of the Joint Chiefs of Staff — are far less convinced of this scenario. They point to a Central Intelligence Agency study indicating that the Soviet Union would quickly outpace the US in unrestrained production of missiles because of ready Soviet assembly lines and the traditional Russian fetish of quantity over quality. Political culture, too, would work against the US in an unconstrained arms race, given Americans' cyclical preference for butter over guns — and the ability of the authoritarian Kremlin to impose sacrifice on Soviet citizens.

In the defensive race that would accompany the offensive race, virtually everyone agrees

that the US would win in the first decade — at considerable cost. Already \$33 billion is being sought by the Reagan administration for preliminary research during the first six years of SDI. The total price tag for a deployed system is hard to tally, but some estimates run as high as \$1 trillion.

- The other extreme — all arms control and no strategic defense — is only a hypothetical alternative. No one is advocating this within the Reagan administration, not even moderates, and no Western Kremlinologist believes this represents anything other than a negotiating ploy by Moscow, given the Soviets' own vigorous research in strategic defense.

What some moderates in Washington do advocate, however — and what Soviet leaders keep hinting at in public (though never in official negotiations) — is some trade-off of mutual restraints on SDI for mutual deep cuts in offensive nuclear weapons.

Moderates say this would make sense both for arms control and for strategic defense — since indications are that strategic defense would prove effective only against a limited and predictable number of warheads. As the OTA study put it (citing Reagan administration concurrence), "an all-out attack can be overcome only if the attack is limited by restraints on the quantity and quality of the attacking forces."

Washington is in fact proposing to Moscow at this point that the two superpowers agree on a mix of strategic defense and deep cuts (though just how negotiable SDI might eventually be-

come is not yet clear). Various moderates argue that a mix of warhead restraints and limited SDI — probably confined to ICBM defense to strengthen rather than undermine deterrence — would be far more effective and cheaper in stabilizing relations and preventing nuclear war than an all-out race. They also contend that verification of arms control compliance could be made reliable enough so that anything beyond marginal cheating would be detected.

Hard-liners, by contrast, fear that any equal limits on both the superpower arsenals would, in practice, hobble Washington much more than Moscow, since the closed Soviet society can more easily cheat than can the US. If the cost of agreed offensive cuts is mutual restraint on SDI, then that cost is too high, they say.

As the OTA study concluded, the choices in SDI and arms control require "a balance of opportunities against risks. The SDI offers an opportunity to substantially increase our nation's safety if we obtain great technological success and a substantial degree of Soviet cooperation. . . . The SDI carries a risk [that it] could bring on an offensive and defensive arms race [and that] deployment, if it took place without Soviet cooperation, could create severe instabilities."