

SPACEWATCH

IS THE STRATEGIC DEFENSE INITIATIVE
IN THE NATIONAL INTEREST?
A POLICY DEBATE

DR. CARL SAGAN

DR. RICHARD L. GARWIN

versus

LT. GENERAL JAMES A. ABRAHAMSON

THE HONORABLE RICHARD N. PERLE

Moderated By

THE HONORABLE EDWARD J. MARKEY

Tuesday, November 17, 1987

1:00 p.m. - 2:30 p.m.

Caucus Room, Cannon House Office Building

Washington, D.C.

ANN RILEY & ASSOCIATES

1625 I St., N.W.

202-293-3950

Washington, D.C.

11/11/87
"Is the Strategic Defense Initiative in the National Interest? A Policy Debate," with C. Sagan and R.L. Garwin versus J.A. Abrahamson and R.N. Perle, moderated by E.J. Markey, at the Caucus Room, Cannon House Office Building, Washington, D.C., Proceedings recorded by SPACEWATCH. (111787SDI?)

11/29/87 Filed by R.L. Garwin

111787SDI?

P R O C E E D I N G S

1
2 REPRESENTATIVE MARKEY: Ladies and gentlemen,
3 friends, and colleagues. I want to welcome you here today to
4 the debate on the question: Is the Strategic Defense
5 Initiative in the National Interest?

6 To address this topic, we have with us two men who
7 might be characterized as the architects of the President's
8 Strategic Defense Initiative, and two of the program's most
9 formidable critics. Each of our participants holds an
10 impressive set of credentials, and unparalleled advocacy
11 skills. There is little doubt that they will do credit to
12 their respective points of view.

13 This debate has been organized by Spacewatch, a
14 nonprofit research and investigative organization. As the
15 founder of Spacewatch, I want to thank the staff under Eric for
16 their capable organizing effort to bring us all together.

17 This event could hardly be more timely. Three weeks
18 from today, President Reagan and General Secretary Gorbachev
19 will be in the midst of a major summit meeting here in
20 Washington. While the primary purpose of the the summit will
21 be to conclude a long awaited treaty to eliminate intermediate-
22 and short-range missiles in Europe, it will also set the stage

1 for other critical negotiations. For the INF treaty is just
2 the tip of the iceberg of arms control measures needed to
3 reduce the enormous strategic nuclear weapons arsenals of both
4 superpowers. Whether the Strategic Defense Initiative proves
5 to be a bargaining chip or an impediment to achieving deep
6 reductions in strategic nuclear weapons remains to be seen, but
7 our hope is that this debate will provide a provocative prelude
8 to the Washington summit.

9 Moreover, I would hope that our distinguished
10 panelists will provide insights and some effective debating
11 points for those of us who will wrestle with these difficult
12 questions in the Congress and, equally important, to those who
13 will be running 1988 for the Presidency of the United States.

14 At this debate we intend to disprove a pessimistic
15 axiom written by British critic Cyril Connolly, who once said,
16 "Where there are two alternatives: one intelligent, one
17 stupid, one noble, one ignoble, one serious and sincere, one
18 undignified and one false, one far-sighted, one short; we
19 invariable choose the latter."

20 We have agreed to the following ground rules for this
21 debate:

22 By a flip of the coin, we have agreed that the

1 speaking order will be as follows: We will open with Richard
2 Perle, then to Richard Garwin, then to James Abrahamson, and
3 then to Carl Sagan. Opening statements will be limited to five
4 minutes, and we will be strict about adhering to these time
5 limits. In the front row we have a timer who will signal the
6 Chair and the speakers when the clock is down to 30 seconds.

7 For rebuttals, we will reverse the speaking order
8 allowing no more than four minutes for each panelist.

9 Following the rebuttals, we will allow questions
10 between the panelists. In the original order, each panelist
11 will be allowed one question directed to one or both of the
12 opposing panelists. Responses will be no more than two
13 minutes.

14 And finally, each speaker will be given three minutes
15 for their closing statements, and the closing statements will
16 be presented in reverse order of the opening statements.

17 Then it will be the audience's turn. Everyone should
18 have received a card upon entering the room. If you would like
19 to put a question to one of the panelists, write your question
20 on the card and the panelist you would like to address it to,
21 and also your name. There will be Spacewatch staff members
22 with name tags to pick up the cards throughout the debate. I

1 will then put the questions to the panelists. We will try to
2 hold as much time as possible for your questions.

3 Without any further delay, let me introduce our
4 panelists:

5 Dr. Carl Sagan is the David Duncan Professor of
6 Astronomy and Space Sciences and Director of the Laboratory for
7 Planetary Studies at Cornell University.

8 In addition to more than 600 published scientific
9 papers and popular articles, Dr. Sagan is author, co-author or
10 editor of more than twenty books, including Broca's Brain,
11 Comet, Contact, and the Dragons of Eden, for which he was
12 awarded the Pulitzer Prize. His Emmy and Peabody Award winning
13 television series "Cosmos" became the most widely watched
14 series in the history of American Public Television, and has
15 now been seen in 60 countries by over 300 million people. The
16 accompanying book, also called COSMOS, was on the New York
17 Times bestseller list for 70 weeks and is the best-selling
18 science book ever published in the English language.

19 Lieutenant General James A. Abrahamson is Director of
20 the President's Strategic Defense Initiative Organization. He
21 is responsible for managing and selecting key research and
22 development programs designed to eliminate the threat posed by

1 strategic nuclear ballistic missiles, and to increase the
2 contributions of defensive systems to U.S. and allied security.
3 The General is a command and test pilot with more than 3000
4 flying hours.

5 He has a Bachelor of Science degree in Aeronautical
6 Engineering from the Massachusetts Institute of Technology and
7 a Master of Science degree in the same field through the Air
8 Force Institute of Technology at the University of Oklahoma.
9 In addition, General Abrahamson holds three honorary doctorate
10 degrees in Engineering from New York University, from Utah
11 State University, and from Rensselaer Polytechnic Institute.

12 The Honorable Richard Perle. From 1981 until May
13 1987, Mr. Perle served as Assistant Secretary of Defense for
14 International Security Policy. From his office at the
15 Pentagon, he had responsibility for theater and strategic
16 nuclear weapons' policy, trade and technology exports, European
17 and North Atlantic Treaty Organization policy, and negotiations
18 between the United States and its western allies and the Soviet
19 Union.

20 Since leaving the Department of Defense, Secretary
21 Perle has become a Resident Scholar at the American Enterprise
22 Institute in Washington, D.C., and a contributing editor of

1 U.S. News and World Report. He has concluded a contract with
2 Random House for a political novel that is intended for
3 publication in 1988.

4 And finally, Richard Garwin, who was born in
5 Cleveland, Ohio, and received a Ph.D. in Physics from the
6 University of Chicago in 1949.

7 After three years on the faculty of the University of
8 Chicago, he joined the IBM Corporation in 1952, and is at
9 present IBM Fellow at the Thomas J. Watson Research Center,
10 Yorktown Heights, New York; Adjunct Research Fellow at the
11 Kennedy School of Government, Harvard University; Andrew D.
12 White Professor-at-Large, Cornell University; and Adjunct
13 Professor of Physics at Columbia University. In addition, he
14 is a consultant to the U.S. Government on matters of military
15 technology and arms control.

16 He has published more than 200 papers, and has been
17 granted 34 United States patents.

18 So that is our panel. It is a distinguished one. We
19 look forward to a lively and enlightening debate, and we will
20 begin with an opening statement from Richard Perle.

21 OPENING STATEMENT BY THE HON. RICHARD PERLE

22 MR. PERLE: I must say, Mr. Chairman, as I look at

1 the audience that I am reminded of the story of Machiavelli on
2 his death bed. A Priest was summoned and arrived at
3 Machiavelli's side, and he leaned over and said, "Do you
4 renounce the devil and embrace the Lord?"

5 No response.

6 He repeated the question a second time, without
7 response, and a third time.

8 Finally, after a third time, Machiavelli slowly
9 lifted his head from the pillow and he said, "Father, this is
10 no time to be making new enemies."

11 At the risk of making enemies, I intend to discuss
12 today the view that the Strategic Defense Initiative is indeed
13 in the national interest, and I will do so under five broad
14 categories:

15 First, the current situation;

16 Then, what is the Strategic Defense Initiative;

17 Something about the Soviet program;

18 Something about defensive systems conceptually; and

19 Finally, some remarks about the future of technology.

20 The current situation is easy to describe. As of
21 today, the United States is wholly incapable of stopping a
22 ballistic missile fired at our territory, even a single

1 ballistic missile, even a missile fired by accident, even a
2 single missile fired by let's say an errant Soviet submarine
3 commander--No capability whatsoever. We would have to watch it
4 complete its trajectory and reach its target.

5 This is unprecedented in human history that a threat
6 as obviously large as the threat of a nuclear weapon striking
7 our territory is should go without any response whatsoever. It
8 represents unprecedented indifference to the need to provide
9 the minimal insurance against the possibility of an accident or
10 a miscalculation.

11 For those who believe that the most probable nuclear
12 war is a nuclear war launched and initiated as part of the plan
13 to achieve political purposes, or for those who believe that an
14 accident could take place, it seems to me basic common sense to
15 deal with both contingencies, including what I happen to
16 believe is more likely, which is the possibility over time of
17 an accident.

18 Now what is the Strategic Defense Initiative as a
19 response to this situation? It is first of all a research and
20 development program. No decision has been made to deploy the
21 fruits of that research and development program, nor could one
22 intelligently be made before the research and development and

1 testing and evaluation is complete.

2 The program is aimed at determining whether we have
3 the technological and financial resources to develop and
4 perhaps eventually deploy a defense that would strengthen our
5 national security and give us reasonable insurance against the
6 possibility of an accident.

7 But we can't answer that question until the research,
8 development, testing, and evaluation are complete. I find it
9 surprising that men of science, without waiting for the
10 answers, without waiting for the research to go forward, have
11 made up their minds.

12 A strategic defense that might result from the
13 program of research and development that we have underway need
14 not, in my judgment, be a perfect defense, although there are
15 those who believe it must. A partial defense would protect us
16 against an accident or a miscalculation. A partial defense
17 would strengthen deterrence by protecting the critical elements
18 of our open deterrence posture.

19 The Soviets have a strategic defense initiative.
20 They don't advertise it, but they have been hard at work
21 developing technologies very much along the lines of those that
22 we have underway, and indeed they invest massively in defenses.

1 Conceptually, we do a great deal of a defensive nature. We put
2 concrete around our missiles so that they can't be destroyed,
3 or we make them mobile, or we hide them under the oceans in
4 submarines.

5 I see no fundamental difference in concept between
6 the sort of passive defenses that we all recognize as vital to
7 maintaining an adequate deterrent and the active defenses that
8 could serve as a last resort, as a device capable of
9 intercepting ballistic missiles when all other passive
10 defenses, and when the nature of the U.S. deterrent has failed,
11 if it does, to deter, or if an accident takes place.

12 Finally, let me say that I find it difficult to
13 believe that we can stop the march of technology now and
14 forever. We are almost arrogant to believe that. The Soviets
15 are at work, and will continue their program. We couldn't
16 verify the termination of their program if they claimed to do
17 so, and to believe that in the year 2050, let's say, we will be
18 where we are today with respect to defensive technology is to
19 ignore the lessons of history.

20 So the issue before us is whether we will be part of
21 the effort to develop this technology and explore our options,
22 or whether we will drop out of this effort and leave it to

1 others to make their decision and their determination, and
2 perhaps to emerge with a monopoly of strategic defense
3 capability.

4 Thank you.

5 REPRESENTATIVE MARKEY: Our next panelist is Dr.
6 Richard Garwin for an opening statement.

7 OPENING STATEMENT OF DR. RICHARD GARWIN

8 DR. GARWIN: Well, let us return to the origins of
9 ^{U.S. SDF,} the ~~USDI~~, the March 1983 speech by President Reagan where he
10 noted that deterrence of nuclear war has worked and will
11 continue to work, but that it is morally preferable to rely on
12 defense. We need, however, a defense so good that we can
13 threaten no one; then we can give up our own nuclear weapons
14 and it won't matter whether the Soviets retain theirs. If they
15 use them against us, they will do us no harm. They will rust.
16 They will become impotent and obsolete.

17 Four days later, Secretary of Defense Caspar
18 Weinberger said that we were seeking not any kind of partial
19 defense but a total and reliable defense, and he saw no reason
20 why we couldn't achieve it.

21 Four years later, this February, in his testimony
22 Secretary Weinberger said that the Administration seeks a

1 completely effective system which will be a thoroughly reliable
2 defense, and will be able to destroy Soviet missiles as they
3 come out of their silos, and if any should be missed, then at
4 the separation phase, and so on, we would destroy them; we
5 would protect entire continents. It would not be designed to
6 protect missile sites or anything of that kind, but would
7 protect populations.

8 Well, those are great hopes and great promises, and
9 that is how the SDI began. But that President is ill-served by
10 the pretense that has deceived Secretary Weinberger, that
11 permits him to believe that the President's goal is still the
12 goal and the promise of the SDI. Indeed, that goal is now
13 stated by the SDIO organization as enhancing deterrence of
14 nuclear war, whereas the President's aim was explicitly to
15 replace deterrence.

16 The President's goal was to be able to give up
17 persuasion of the Soviet leaders not to attack us or our
18 allies, instead rendering a nuclear attack harmless. Last year
19 in a debate with me in Baltimore, General Abrahamson's special
20 assistant defined quantitatively what SDI must accomplish for
21 its leaders to believe that they have successfully carried out
22 their mission and deterred nuclear war.

1 He said the Soviets could right now destroy 6000
2 military targets in the United States with their strategic
3 nuclear weapons. He said that if SDIO could show us the way to
4 limiting the Soviet targets destroyed in the United States to
5 3000, then the Soviets would be deterred; not accomplishing
6 their military goals, they would never attack.

7 But what about defense of populations that we have
8 heard about now that was the President's goal? Would we defend
9 our cities? No, he said, there is no military benefit to the
10 Soviets in destroying U.S. or allied cities, so they would not
11 strike them, and we would not need to defend our population.

12 According to SDIO, the Russian Bear has become the
13 Soviet pussycat. Apparently, SDIO says, we are to forget about
14 preventing Soviet compulsion--coercion of the U.S. or its
15 allies. We are supposed to forget about the threat that
16 Secretary Perle has been stressing for the last 15 years. By
17 that logic, nuclear war could be reliably prevented and freedom
18 preserved by our unilaterally giving up our entire military.
19 We would have no more military targets to be destroyed,
20 therefore no threat of war.

21 More realistically, there is now the very real
22 prospect of deep cuts in the Soviet nuclear weapon force,

1 beginning with 1500 warheads to be eliminated in the INF treaty
2 to be signed in three weeks here in Washington, and a cut of 50
3 percent or more in strategic nuclear weapons. This is a surer
4 way and a quicker way to preserve those military targets in the
5 United States than by continuing with a research program which
6 is bound to fail.

7 Now am I against strategic defense? Absolutely not.
8 I think the unprecedented indifference that you heard about
9 from Secretary Perle, ignoring the threat of the missiles fired
10 by accident, of a single missile fired by an errant Soviet
11 commander, ignoring the threat to the Minuteman, is caused by
12 the fact that the leaders of the United States have not had
13 presented to them limited programs to accomplish these limited
14 options soon and economically.

15 Over the decades I have been much involved in this
16 sort of thing and have proposed, for instance, close-in defense
17 of the Minuteman silos, taking advantage of the fact that a
18 Minuteman silo survives if you can keep the nuclear warheads
19 more than a couple of hundred yards away. There has been no
20 interest in this government or in previous administrations
21 because we do not regard the threat to Minuteman as real.

22 In 1983, President Reagan's Scowcroft Commission on

1 Strategic Forces said that Minuteman vulnerability ^C would well
2 occur, but that the overall force would be invulnerable and
3 deterrence assured because of the presence of the submarines
4 and the aircraft.

5 As for the accidental launch of any number of Soviet
6 missiles, we can solve that problem in a year--and I have
7 written about it for many years--by retaining on the Soviet
8 missiles in operation, as well as on our own missiles, the
9 command-destroy link you saw work so well on the two solid
10 rocket boosters in the Challenger accident.

11 The same is true against a terrorist launch of single
12 ICBMs. We have a weapon already in place that is called the
13 "CIA." If we need a backup, it can be the Minuteman II to
14 perform a nuclear intercept thousands of kilometers away.

15 Thank you.

16 REPRESENTATIVE MARKEY: Thank you, Doctor.

17 Our next panelist is General James Abrahamson.

18 GENERAL ABRAHAMSON: Throughout this debate, what you
19 often hear, in my judgment, oversimplistic arguments on a very,
20 very complex subject. I must start with a description of what
21 the program truly is, and build on what Richard Perle has
22 outlined; and, secondly, reject what I consider to have been

1 the simplistic arguments.

2 In fact, Dr. Garwin is often defining for me what my
3 objective is. The objective is very clear. The objective was
4 laid out in the President's program, and has not modified.

5 It was a three-fold challenge that the President laid
6 out. The first one was, Isn't there a strategy that might be
7 more effective for all the unknowns of the future? That
8 strategy is a search for a strategy that would not keep the
9 nation naked to the worst weapon that has ever been developed
10 in history.

11 Secondly, that a strategy by itself is insufficient,
12 in fact, to prevent war. In fact, the strategy must be
13 supported by true technical developments so it can be
14 implemented.

15 Finally, a very important element right from the
16 start, was to use our development -- to use our technical
17 prowess -- to enhance the ability to achieve meaningful arms
18 reductions in the process.

19 It is the combination of all three of these elements
20 that truly is the Strategic Defense Initiative. It is not
21 merely an attempt to build lasers, or to go to war in space.

22 The technique that is often used to debunk this

1 concept is to reach way out into the future, and to take three
2 basic kinds of things. The first one is to define a poor
3 system, one that we can afford. The Union of Concerned
4 Scientists have often done that.

5 If you go through their various reports, from the
6 first one in March of 1984 -- where they defined what it is we
7 are trying to build and said that, for a particular kind of
8 laser, it would probably take something like 2,400 battle
9 stations, and then costed that -- over time they have finally
10 come to the point that, for those same conditions, that in fact
11 it is not 2,400, but is on the order of -- as Dr. Garwin
12 indicated in his ^{Nature} ~~nature~~ article -- 46 to 50.

13 Then he shifted gears, changed the fundamental
14 problem, and went back to the 2,000. By the way, Dick, when I
15 was in school it really wasn't effective, when I got the answer
16 wrong, to change the problem. I usually didn't get any credit
17 for that. The same kind of reasoning has occurred in several
18 other places, but let me move on.

19 In some cases, they make a simple analysis, which is
20 either irrelevant or wrong, and use that in the arguments to
21 say that it cannot be achieved. Again, the Union of Concerned
22 Scientists, in laying out their discussion on the neutral

1 particle beam, scientifically made the dramatic error that made
2 this, in fact, an impossible achievement, and in fact is
3 incorrect.

4 ~~...Finally~~ Finally, they say that it can't survive very often.
5 One of the ways in which they approach this is that they do a
6 theoretical analysis, which is practically -- and operationally
7 -- not significant.

8 All of those are arguments that are often used. But,
9 frankly, those are details. The fundamental principles that
10 each of you should consider is, Do we forever wish to rely only
11 on a vision that is dominated by a single weapon, and having
12 our country -- and perhaps their country -- laid open to that
13 weapon?

14 The single most important characteristic of any
15 deterrent strategy -- and, by the way, very often, in fact in
16 my last debate with you, Carl, there was a final assertion that
17 what we are dealing with here is destabilizing -- what we must
18 do is look to the single most important characteristic of any
19 deterrent strategy.

20 That is: Does it, when the crisis develops, when the
21 misunderstandings develop, does it discourage a first strike
22 with these powerful, powerful weapons? Or does it discourage

1 it?

2 I would like to leave two challenges with the other
3 members of this panel. They are to explain how it is that
4 defenses truly are destabilizing. Secondly, to explain how it
5 is that they will deal with the fact that the Soviets have such
6 an aggressive program, searching in each of these fundamental
7 areas.

8 Remember, the Soviets have been invaded. They
9 understand just how it is that a nation cannot survive,
10 particularly under a surprise attack. They learned that in
11 1942, and in the first world war.

12 So, if you would please explain what your proposal is
13 to deal with -- there are many of these over on the side --
14 what the Soviet challenge is in strategic defense. I won't go
15 into all of the details of that, but for those of you who would
16 like to see it, there are some booklets on the side that
17 explain it. (*"The Soviet Space Challenge" -- November 1967, U.S. Dept of Defense*),

18 REPRESENTATIVE MARKEY: Thank you, General.

19 Our final opening statement will be presented by Dr.
20 Carl Sagan.

21 DR. SAGAN: Thank you, Congressman Markey.

22 There are almost 60,000 nuclear weapons in the world;

1 nearly 25,000 of them are so-called strategic weapons, which
2 are designed to go from the home land of one nation to the home
3 land of another.

4 There are only 23,000 cities on the planet Earth, if
5 you define a city as having 100,000 people or more. This is
6 one of many ways of indicating the grotesque disproportionality
7 between the power of the nuclear arsenals of the United States
8 and the Soviet Union, and any conceivable use.

9 It is very likely that in case of a so-called central
10 exchange between the United States and the Soviet Union, the
11 long run ultimate deaths will be several billion people.

12 Given these stark and unprecedented perils, it is
13 natural to try to find a way out of this trap that the United
14 States and the Soviet Union have set for themselves and the
15 rest of the planet: jury-rigging, booby-trapping the planet
16 Earth with 60,000 weapons of unprecedented ferocity and
17 destructive power.

18 The idea, therefore, of defending against a massive
19 attack by the potential adversary is attractive, and was
20 reflected in the President's March 23, 1983 speech, in which he
21 explicitly talked about population defense. Not to enhance
22 deterrence, not improving the balance of terror, not shooting

1 down an errant missile, or one launched by a terrorist group or
2 a rogue nation: but defense of the continent of the United
3 States.

4 This has clearly been the intent of the President and
5 the recently-retired Secretary of Defense. But, because this
6 is so difficult to manage, there is a temptation to shift the
7 ground, to invent more modest objectives. That is why we now
8 hear of these other objectives.

9 This is sufficiently serious that it has been called,
10 on the Floor of the Senate, a bait-and-switch tactic. The
11 population is drawn in by the prospect of being defended, even
12 against a massive Soviet attack. And, when they are in the
13 used car salon, then they are offered something more modest.
14 The hope is that no one will notice.

15 SDI is fine, if it is perfect. That is, if no
16 significant number of Soviet warheads leaks through the shield.
17 The most optimistic numbers you can hear from technically
18 competent advocates of Star Wars is 70, 80, or maybe even 90
19 percent of incoming Soviet warheads destroyed.

20 Take the more optimistic number. If 90 percent are
21 destroyed, 10 percent get through; 10 percent of, say, 10,000
22 Soviet warheads is 1,000 warheads. One thousand warheads is

1 much more than is needed to obliterate the United States.

2 The shield is leaky. This is different from the
3 usual presentation, say, on network television where what you
4 see is two or three warheads on lazy, arcing trajectories, each
5 of which has the letters "CCCP" on them, so we know whose they
6 are.

7 [Laughter.]

8 DR. SAGAN: Then, screen left, comes a spiffy laser
9 battle station, with the letters "USA" on it, so we know which
10 one that is. Then there is a noise like bzzt, bzzt, bzzt --
11 three flashes of light -- and surgically removed the screen are
12 the three Soviet warheads, and that is that.

13 [Applause.]

14 DR. SAGAN: The video arcade version of SDI. It has
15 dominated the thinking of most Americans on this issue.

16 An actual representation, which we have made an
17 attempt -- in this painting by John Lombard to the right -- to
18 demonstrate is an overtaxed U.S. SDI system, shooting down some
19 fraction of the incoming warheads, with hundreds or thousands
20 of warheads penetrating the defense, landing on U.S. territory.
21 That is what all those little orange mushroom clouds are.

22 That you don't see on network television

1 representations of Star Wars.

2 There is a delusion of perfection. If you look at
3 the weapon systems that have been procured during this
4 Administration, and look at the immense numbers of embarrassing
5 failures -- if you look at the 241 deaths of the Marines in
6 Lebanon; or the 37 deaths on the U.S.S. Stark; if you look at
7 the shuttle disaster; or, if you like, Chernobyl -- it becomes
8 very clear that the enormous reliability required for Star Wars
9 -- and they will be the same contractors responsible for all
10 those other systems responsible for Star Wars -- is simply not
11 achievable.

12 That is its most serious defect. It has many
13 defects, but that is its most serious one.

14 REPRESENTATIVE MARKEY: That concludes the period for
15 our opening statements.

16 We now move to the rebuttal period. The speakers
17 will be recognized in reverse order. For a four minute time
18 period now we will recognize those speakers, and we will begin
19 with Dr. Carl Sagan.

20 We will leave it to the decision of the various
21 teams, and their choice is to have Dr. Garwin begin on the
22 rebuttal period.

1 We will recognize Dr. Garwin for four minutes.

2 DR. GARWIN: Thank you. Let's bring us back to a
3 discussion of the SDI program, on which General Abrahamson has
4 been in charge of spending some \$5 billion; and for which the
5 Fletcher Committee, in 1983 -- which wrote the technical
6 blueprint for the research program -- said that some \$70
7 billion would be required: \$70 billion, over about ten years.

8 That is what we are discussing, and the things that
9 are being said now; ^{not} ~~now~~ what people may or may not have said
10 before. I want to address a couple of the questions that have
11 been raised.

12 For instance, in December of 1986, the former head of
13 System Design Studies for the SDI joined with four colleagues
14 to publish a proposal for early deployment of an SDI defense.
15 Incidentally, it had 2,000 defensive satellites, but of a
16 different type than those that General Abrahamson was talking
17 about.

18 Two years ago President Reagan signed a National
19 Security Decision Director, Number 172, which said that no SDI
20 system could be considered for deployment unless it was
21 adequately survivable and cheaper to build than to overcome by
22 more offense.

1 Why is that? This addresses the question that
2 General Abrahamson asked, about how our defense is
3 destabilizing. Because the State Department published an
4 official explanation of this NSDD 172, it said that if it was
5 not adequately survivable, it would ^{provoke}~~protect~~ attack on the
6 system: provoke nuclear war, rather than prevent it.

7 If it were cheaper to build than to overcome with
8 more offensive weapons, it would stimulate a nuclear arms race
9 in offensive weapons, rather than quench one.

10 I see, however, the same kind of head-in-the-sand,
11 ostrich behavior toward this question of survivability and cost
12 that has lead to the Challenger disaster, and to a number of
13 other failures in centrally directed programs.

14 It is worse this time, because we are not up against
15 nature -- cold launch weather. We are not up against the
16 engineering realities of a supersonic transport airplane. We
17 are up against the cleverness, and determination, and resources
18 of the Soviet Union which, if they wanted to have their weapons
19 negated, could just throw them away.

20 Obviously, it is worth a great deal to them, as it is
21 to us, to maintain the effectiveness of ^{their}~~our~~ nuclear weapons.

22 Let me address another question, as to why the

1 Soviets have such a large program in defense, and in every one
2 of these areas discussed in the SDI.

3 First, they don't. The defense literature itself
4 says that there is no evidence that the Soviets -- although
5 they work in neutral particle beams for fusion research, and so
6 on -- no evidence that they have a weapon program in neutral
7 particle beams.

8 They do not have the space-based ABM experiments thus
9 far that we are proposing. They have had, in the distant past,
10 anti-satellite tests, as we have had; and they have a deployed
11 system for defense against ballistic missiles in the Moscow
12 area -- their one site permitted under the 1972 ABM treaty --
13 just as we had a better system, ^{that} operated for the year 1975-76 in
14 Grand Forks, North Dakota.

15 The key to the question, though, of destabilization
16 is in the other part of General Abrahamson's request ^{to me,} _^ The
17 Soviets know the perils of a surprise attack, and that is
18 exactly why they fear a U.S. SDI.

19 That is exactly why Caspar Weinberger said that a
20 Soviet SDI program would be the worst strategic nightmare he
21 could imagine, because a system incapable of defending against
22 a first strike might be very good at defending against a

1 retaliatory strike -- the little that is left, after the other
2 side has been disorganized.

3 REPRESENTATIVE MARKEY: Next we turn, in rebuttal, to
4 Richard Perle.

5 MR. PERLE: Thank you, Mr. Chairman.

6 Dick Garwin believes that arms control is a superior
7 way to diminish the threat that we face. But Dick, arms
8 control and SDI are not necessarily mutually exclusive. I can
9 recall not long ago when the Soviets said there would be no
10 agreement on intermediate forces, unless we abandoned SDI. We,
11 in all likelihood, will sign precisely such an agreement when
12 the summit takes place in Washington.

13 Moreover, our proposals to reduce offensive forces
14 met with Soviet rejection, until the President launched the
15 Strategic Defense Initiative. I am glad to see that Dr. Garwin
16 believes in limited defenses; so do I.

17 But I am touched by Professor Garwin's confidence in
18 the CIA's ability to deal with all contingencies. It is not a
19 confidence that I share; and I see no reason why we shouldn't
20 have the insurance that would go with knowing that, if a
21 missile should be launched at us, we would have some
22 capability, some chance, of preventing it from doing the

1 destruction it would otherwise do.

2 Dr. Garwin says that the SDI program is bound to
3 fail. What is it that is bound to fail? All research and
4 development in this area? Even the development of limited
5 defenses, of partial defense?

6 Even a defense that might strengthen deterrence by
7 depriving the Soviets of confidence that they could launch an
8 attack against us, and have enough of their weapons to reach
9 their targets to diminish -- unacceptably -- our capacity to
10 respond?

11 How do we know it will fail? History is littered
12 with the intellectual debris of people who believed that things
13 could not be done. For men of science, I find this certainty -
14 - not skepticism, but certainty -- that our research and
15 technology effort must fail truly astounding.

16 Dr. Garwin believes that there is no evidence that
17 the Soviets have an SDI program; but I can assure you that the
18 Soviets are investing heavily in a broad array of technologies,
19 all aimed at determining what kind of strategic defenses might
20 be deployed. The evidence on this is overwhelming.

21 Some of you may have noticed that, in his remarks,
22 Carl Sagan refused seriously to respond to the notion that

1 there are objectives and purposes of the SDI program other than
2 the construction of a perfect defense.

3 He much prefers to erect, as a straw man, the concept
4 of the perfect defense, and then attack that. I don't believe
5 that one needs assume a perfect defense in order, seriously, to
6 face the questions of should we be without any defense. Is
7 there not something in between perfection and absolutely
8 nothing that makes sense, that is in our national security
9 interest, that might protect lives if a disaster should happen?

10 He accuses the proponents of SDI of having switched
11 objectives; as though a program could have only one objective,
12 and the most demanding objective. Most military programs have
13 multiple objectives, and that is as true of the SDI program as
14 it is of many others.

15 One of those objectives is to strengthen deterrence
16 by diminishing the Soviet capacity to execute an effective
17 attack. Another one -- a vital one, in my view -- is to deal
18 with precisely the kind of accident that Dr. Sagan referred to
19 in another context.

20 He reminded us of Chernobyl; he reminded us of the
21 Challenger accident. Yet he would sit here and deny us even a
22 research and development program, knowing that accidents can

1 happen; and, I regret to say, that over the long run, accidents
2 will undoubtedly happen.

3 There is, indeed, a video arcade vision of SDI. But
4 it is Carl Sagan's, not that of the program managers. The
5 program is exploring a broad array of technologies. We don't
6 know whether it can be done. We are withholding judgment about
7 whether it can be done, but we will never know until we try.

8 If we reduce a broad and serious program to a
9 cartoon, then I can understand how one would be discouraged
10 from proceeding forward. That isn't the program that we have
11 embarked upon.

12 I think we all have to answer the question of whether
13 we are prepared, so airily, so breezily, to take the risks of
14 having no program whatsoever, with whatever consequences that
15 may entail.

16 REPRESENTATIVE MARKEY: Thank you.

17 Next, in rebuttal, Dr. Carl Sagan.

18 DR. SAGAN: Thank you.

19 I think we are seeing an important shift in the
20 opinions of those outside of the White House who are supporting
21 SDI. Note the concentration in General Abrahamson and Mr.
22 Perle's discussion on enhancing deterrence.

1 It is as if they have acknowledged that defending the
2 civilian population is impossible. It is an admission of the
3 failure of the President's ^{dream,} ~~failure~~. And, if there is a cartoon ???
4 representation of SDI, it is Ronald Reagan's representation. I
5 think if they wish to distance themselves from the President's
6 vision, they should do so explicitly.

7 On the issue of other ways of enhancing deterrence,
8 that is no problem at all. But is SDI the most effective, the
9 most reliable way, of enhancing deterrence? We can argue that
10 there are many other ways to do that: mobile land-based
11 missiles; de-MIRVing ~~submarines~~ ^{missiles} fleet ballistic missile
12 submarines; and other new technologies. By no means is it
13 clear that anything like SDI is the best way to enhance
14 deterrence.

15 As for research and development: of course there
16 should be research and development. But nothing like the \$3 to
17 \$4 billion cost that we have today. I would like to say
18 something about cost.

19 Naturally, the advocates of SDI do not wish to put a
20 dollar tag on what the full-up system will cost. Secretaries
21 of Defense -- former Secretaries of Defense of both political
22 persuasions -- have made estimates in the \$1 to \$3 trillion

1 dollar range, which gives us some idea of what we are talking
2 about.

3 General Abrahamson, in one of our past debates, has
4 stated that if it was anything like \$1 trillion, he would
5 recommend to the President not to go ahead. That is a very
6 important and straightforward statement from him.

7 The kinds of expenditures we are talking about in the
8 present fiscal climate is a prescription for economic ruin.
9 The United States, in the last six years, has gone from the
10 largest creditor to the largest debtor nation in the world.

11 The present national debt is not only larger than
12 that of any previous Administration, it is larger than the sum
13 total of all previous Administrations, back to that of George
14 Washington.

15 The United States has spent, each year, an increment
16 in the Defense Department budget, during the Reagan
17 Administration, which just equals the increment in the national
18 debt each year. It is not very difficult to see that there is
19 some connection between the two.

20 As a result of these sorts of expenditures, a
21 rhetoric opposing fiscal irresponsibility -- a reality
22 embracing it -- the United States is now, in many respects,

1 something like an underdeveloped nation. We are seventeenth in
2 the world in infant mortality; one-quarter of the population is
3 functionally illiterate.

4 Patent applications are steeply down. They would be
5 much more steeply down if not for Richard Garwin. There are
6 homeless in the streets of every major city; 20 million people
7 go hungry every day. There are half as many advanced degrees
8 in science and technology granted in the United States each
9 year ^{as} ~~than~~ there are in Japan, with half our population.

10 The United States is fourteenth in percent of the
11 population with safe water. And on, and on, and on. The
12 question is whether national security is merely developing more
13 gadgets.

14 I would like to close with a one sentence quote from
15 Dwight Eisenhower. "The problem in defense spending is to
16 figure out how far you should go, without destroying from
17 within what you are trying to defend from without."

18 [Applause.]

19 REPRESENTATIVE MARKEY: Finally, in rebuttal, General
20 James Abrahamson.

21 GENERAL ABRAHAMSON: Dr. Sagan, I thought that that
22 was a very interesting outline of many problems that this

1 nation and other nations have. But I thought that this was a
2 debate about strategic defense.

3 Talking about baiting and switching: I haven't got
4 the foggiest idea, in terms of what the relationship is between
5 education and payment, and SDI.

6 [Applause.]

7 GENERAL ABRAHAMSON: That is the real issue here. In
8 order to deal with the real issue and the investment, it is
9 important to understand what we are spending on the research
10 program. The research program consumes, over the last three
11 years, less than one percent of the Department of Defense
12 budget.

13 It consumes -- and they average over the last three
14 years -- less than one-quarter of one percent of the total
15 federal budget. If the implication, Carl, is that by
16 eliminating SDI you are going to solve all those problems, you
17 are a brilliant problem solver. I hope, very much, that you
18 would be elected to a position of responsibility to do that.

19 [Applause.]

20 GENERAL ABRAHAMSON: I think there is one more key
21 element that must be outlined. Notice the difference when we
22 say that we are attempting to enhance deterrence that nobody

1 has explained why defenses cannot enhance deterrence.

2 After all, the first objective is to prevent that
3 nuclear war, in the very first place. The contention that we
4 have moved away from the President's vision is Dr. Sagan and
5 Dr. Garwin telling me what I am doing; I know what I am doing.
6 I know what the President wants me to do.

7 I have my direction, and it is very, very clear. In
8 the first direction that came out, it said that SDI will
9 enhance deterrence. After all, it is intended, as a first
10 objective, to prevent war. I think that it is very important
11 to illustrate that, merely because we recognize that there is
12 nothing perfect in this entire world, that does not mean that
13 we do not support the President's objective of working to make
14 a very thoroughly reliable, or an effective, defense possible.

15 Let me deal with one more key element of this, and it
16 is important to recognize. The differences between -- even
17 though they may be stylistically very great -- the differences
18 between what we are saying here are not so great as one might
19 say.

20 In both cases, we are saying there should be a
21 research program. In both cases, that research program should
22 be aimed at defense. In the case of Dr. Garwin, he has said it

1 should be concentrating on terminal defense: the attempt to
2 defend weapons, in order to enhance deterrence.

3 In fact he has offered several ideas. Something
4 called Swarmjets. He has also offered a unique idea, and that
5 is burying bombs across the northern territory of the country
6 and blowing it up in such a way that the dust will stop the
7 warheads on the way in. That is a last ditch stand, I must
8 say, as one looks at it.

9 The real difference here is the thrust of the
10 program. One more time, I would say we are searching for the
11 most efficient way to do two things: prevent war, by
12 interfering with their strategy; and, if the tragedy were ever
13 to occur, to find a way to protect as many human beings on this
14 planet as we could, as the creativity of engineers, and as the
15 resources that the Congress allows us -- not only now, but in
16 the future -- that can be applied to the overall program.

17 We are dedicated to making it affordable, and cost
18 effective of the margin. Those criteria.

19 The really good news is that we are making progress
20 in all of these fronts. We are making progress in the
21 strategy. The technical progress is immense at this point. I
22 invite many of you to come and look at that. Spend as much

1 time as you do listening to both sides of the debate, seeing
2 what the real progress is.

3 We have the most open program in history. Thirdly,
4 the last challenge the President laid out was one where, for
5 the first time in history, we have the prospect of true arms
6 reduction -- in spite of all the worrisome efforts that the
7 critics of the program have said that this will make it
8 impossible.

9 For the first time, we have the real reductions. We
10 have real negotiable proposals on the table. That sounds, to
11 me, like a successful strategy. And a good news story.

12 REPRESENTATIVE MARKEY: Thank you, General, very
13 much.

14 That concludes the opening statement and rebuttal
15 period. We are now going to move to a period of questions,
16 wherein the panelists can ask one another questions. The
17 limitation will be this: collectively, each side will be given
18 two minutes, to be decided upon by that side as to how they
19 will use it in order to respond to any of the questions which
20 are posed.

21 We would ask, in anticipation of that, that all of
22 you out there who have been given cards to write your own

1 questions, that you begin to pass them down to the center of
2 each one of the aisles. The staff will come down and pick up
3 your questions, so that they can also be posed to the
4 panelists.

5 Let us begin at this time, with a question by Richard
6 Perle to Dr. Garwin and Dr. Sagan.

7 MR. PERLE: Carl, for how long do you think it is
8 prudent, safe, and wise for us to go on without any capacity
9 whatever to interfere with even a single, accidentally launched
10 missile?

11 Recognizing, as you did, that we should have an SDI
12 program, but not at the \$3 to \$4 billion level: what level do
13 you think is appropriate? How would you organize that program?

14 DR. SAGAN: First of all, I think we have heard --
15 CIA aside -- from Richard Garwin ways to do it which don't
16 involve SDI. For example, the fusing by radio signals of
17 warheads on U.S. and Soviet strategic missiles; so that, if
18 there is an errant launch, they can be destroyed in flight.
19 Assuming the goodwill of either side.

20 If they are really not ^{of} good will, it is unlikely they
21 will fire ^(only) one ballistic missile. The other method that he
22 mentioned was the use of Minuteman boosters and warheads to

1 destroy missiles not so fused -- either by the Soviet Union, or
2 by some other nation.

3 The idea of a terrorist group having a ballistic
4 missile is slightly laughable. SDI does not respond to the
5 most likely delivery mechanisms of terrorist groups or small
6 nations, which are nuclear weapons in embassy basements in
7 Washington, and motor boats in harbors.

8 As far as a prudent level of SDI funding goes, I
9 would think something around a billion dollars a year might not
10 be excessive.

11 REPRESENTATIVE MARKEY: The next question will be
12 posed by Dr. Garwin to General Abrahamson and Richard Perle.

13 DR. GARWIN: General Abrahamson, in a September 21
14 report from the Department of Defense to the Congress, it says,
15 "Because it cannot be expected that the Soviet threat will
16 remain static, a defense that could be effective if deployed in
17 the mid-1990s may not be effective if deployed significantly
18 later. Consequently, such delays could result in the loss of
19 deployment options."

20 I gather, then, that there is a race imagined between
21 the deployment of a strategic defense and the evolution of the
22 Soviet strategic threat. Your chief scientist told us last

1 year that SDI would be feasible only if it could be done in a
2 totally revolutionary management fashion, taking half the time
3 of a normal program.

4 You, yourself, I believe have said that the launch
5 cost to orbit has to be reduced, from your \$1,500 per pound for
6 the space shuttle, by a factor of 10 or so. You would be
7 working with exactly the same contractors as on the space
8 shuttle and other defense programs, some of which Dr. Sagan
9 mentioned.

10 How will you, and they, achieve a ten-fold reduction
11 in launch costs below what you were able to do when you were in
12 charge of the shuttle program? And do that responsibly, and
13 predictably sooner than the Soviets can react? How can you
14 assure the nation and our allies that that can be done?

15 GENERAL ABRAHAMSON: Dick, I am delighted you asked
16 that kind of a question. I am afraid I will have to answer it,
17 since you are arguing by analogy, with my personal history.

18 I was responsible for the Maverick missile in the
19 early days. That was when I was in charge of it -- the lowest
20 cost, and most effective missile within its specifications than
21 had ever been produced.

22 The lowest cost, most effective fighter that the

1 United States has produced is the F-16. In fact, I brought
2 that in line in three years. I didn't do it alone; I was
3 fortunate enough to have a national team of exactly those
4 contractors that you are degrading.

5 I would say that, when you compare with the space
6 shuttle -- first of all, when I was in charge of it, it was a
7 safe program. Secondly, it was very clear from the start that
8 the space shuttle was in a generation of technology that would
9 not offer the cost effectiveness that we would need for not
10 only this system, for the future, but for others.

11 Therefore, we are embarked on precisely that, and
12 that is the good news of program. I can give you example after
13 example of that. The research is not scientific research,
14 primarily of the kind that is often suggested: creating a new
15 laser, or something of that. Although part of it is that.

16 Let me give you one example of a good news story of
17 exactly that kind. In every one of these missiles, or in every
18 one of our systems, we would have to have an inertial unit:
19 something that tells the missile where it is pointed, and how
20 it is pointed.

21 We have now achieved what I consider to be an
22 economic breakthrough in that are. In the past, all of these

1 units cost on the order of \$100,000. We now have one that will
2 promise, in production, to be on the order of \$5,000.

3 I can give you any number of those; but that is part
4 of the good news story.

5 The answer is, we will find a way, or we will not
6 propose that it is ready.

7 REPRESENTATIVE MARKEY: We will stay with General
8 Abrahamson, as he poses a question to Drs. Garwin and Sagan.

9 GENERAL ABRAHAMSON: I think that I have already
10 asked the key question, and Dr. Garwin countered by talking
11 about a type of stability that I think is often confused.
12 There are several types of stability.

13 One is called arms race stability. That is what is
14 often used in these discussions. Perhaps the most important,
15 and the one that is characteristic of any of these that I talk
16 about, is this crisis stability. The one where we have a
17 situation -- not where it is merely an accidental launch; or
18 maybe it is, in fact, a terrorist operation -- but where the
19 real issue is, How do you take away the incentive to strike.

20 You have not answered my fundamental question. Could
21 you describe how it is that, relying exclusively on offensive
22 missiles forever -- with all the technical and political

1 unknowns of the future -- truly can offer us the level of
2 crisis stability the world deserves?

3 DR. GARWIN: That is your question. We really can't
4 rely on offensive missiles always. We will have some defense,
5 if it is necessary. But the defense for these limited jobs has
6 to be put up against other means of accomplishing the same
7 goals.

8 That was the recommendation of the ^WScocroft
9 Commission: no defense in our future. But single warhead
10 ICBMs in survivable basing -- either in silos or mobile;
11 smaller submarines, to permit the reduction of nuclear weapons,
12 without having all our eggs in a single submarine basket.

13 The problem is that we want to escape from the fact
14 of vulnerability. One escape is into fantasy. We know people
15 like that. But that is not an option for a democracy which
16 wants to take care of itself, and even contribute to the well-
17 being of the rest of the world.

18 That is why I propose that we have a billion-dollar-
19 a-year non-SDI program. The SDI has too much advertising, too
20 much demonstration, and not enough performance. It should be
21 oriented to investigating whether there are any new ideas out
22 there.

1 The ideas that have been proposed thus far have been
2 found wanting. If you say maybe somebody will think of
3 something new, may be. We want to be the first to do so. But
4 we will not think of it in a \$70 billion program oriented
5 toward deciding whether deployment is possible or not.

6 REPRESENTATIVE MARKEY: Finally, Dr. Carl Sagan for
7 General Abrahamson and Mr. Perle.

8 DR. SAGAN: Thank you. I want to see if I can
9 succeed in drawing the distinction I have been pushing at a
10 little bit.

11 The President, on more than two dozen occasions, has
12 stressed that SDI is either (a) for population defense; or (b)
13 is non-nuclear. It is true that the proposed SDI -- without
14 much significant discussion with his advisors, when Secretary
15 of Defense Weinberger heard about it, his comment was: It's
16 not a bomb, is it?

17 What I would like to ask is, Is it true what the
18 President says, that it is for population defense and it is
19 non-nuclear? Is that what SDI is working on? Or is the
20 President misinformed?

21 MR. PERLE: Again, Carl, you are posing this as a
22 choice between alternatives when, in fact, it is entirely

1 possible, and the SDI program is, indeed, intended to explore,
2 a variety of approaches and a variety of objectives.

3 You asked the question earlier that if we wished to
4 put distance between ourselves the President, why not say so
5 explicitly. My own view is that the President's long term
6 vision of the comprehensive defense is just that: a long term
7 vision.

8 In the practical world of the near future, I think we
9 are unlikely to accomplish that. But you go to the extreme
10 view of saying that, because you cannot accomplish a perfect
11 defense in the long term future, we should have no defense now.

12 That strikes me as dangerous and unwise. The program
13 aims at a layered defense, with varying degrees of capability
14 undoubtedly evolving over time. I believe that, from the
15 earliest deployment of the strategic defense, we would have the
16 enormous benefit of knowing that we had some significant
17 capability to deal with the kind of accident that you made a
18 persuasive case is likely to occur.

19 Dick Garwin wants to do it with Minuteman II
20 missiles. I can remember talking to Dick Garwin 15 years ago
21 about the effectiveness of a program of ballistic missile
22 defense that was tailored specifically for that purpose. His

1 view was as pessimistic then as his view is today.

2 Yet he thinks you can take an ICBM and easily convert
3 it into an anti-ballistic missile device. If he would apply
4 that standard of assurance and confidence to the SDI program,
5 he might trade places with General Abrahamson.

6 But the fact is that the multi-layered approach
7 offers every opportunity to produce some early defenses that
8 are partially effective; and, depending on the evolution of
9 technology, it may be possible someday to reach that more
10 comprehensive goal.

11 But you do not have to accept -- and I think it would
12 be foolish to accept -- that only a comprehensive defense is
13 worth pursuing. And, if it can't be pursued, then we should
14 have no defense at all. That is the essence of your position.

15 GENERAL ABRAHAMSON: I think I do need to add a
16 comment. It is continually posed that a partial defense, or a
17 defense that is building by phases -- one step at a time
18 towards the President's long term goal -- is either to defend
19 strategic weapons, or people.

20 That is not the case. If it were exactly the kind of
21 terminal defense, and limited to the terminal defense -- as Dr.
22 Garwin has indicated -- that might be the case. Then we would

1 have to make a choice: do we put those terminal defenders
2 around a city? Or do we put them around a Minuteman field?

3 That is precisely the function of a layered defense.
4 To ensure that we can attack the ballistic missiles at the most
5 efficient area. That is when they are just getting started.
6 And layers behind that.

7 What we defend depends on what the Soviets are
8 shooting at. We will, indeed, be defending people. We will be
9 defending people right from the start. It won't be a perfect
10 defense.

11 But, in the long run, we will continue in a
12 responsible way. The responsible way to build anything as
13 radical as this, is a step at a time; to get experience in that
14 first step, and then build toward a second step. And enhancing
15 the technology at each step of the way.

16 REPRESENTATIVE MARKEY: Let us just conclude at that
17 point on the question period, and move on to questions from the
18 audience.

19 We will begin with a question which is posed to the
20 Abrahamson-Perle side. We will give them two minutes to
21 answer, and then two minutes to the other side to also comment
22 upon what they have heard.

1 The first question is this: Since the Soviets are,
2 and are likely to remain, adversaries, why isn't SDI likely to
3 provoke the Soviets to deploy additional offensive weapons, in
4 order to offset U.S. defense deployments, and to enhance their
5 own deterrent forces?

6 General Abrahamson? Mr. Perle? Two minutes.

7 GENERAL ABRAHAMSON: If we were limited, and limited
8 our thinking to terminal defenses of the kind that Dr. Garwin
9 is talking about, that would be exactly the case. A single
10 layer, with a single, countable number of responsive missiles,
11 all they have to do is add a few missiles in order to change
12 that.

13 That is very different than a layered defense. For
14 example, five layers with only 60 percent effectiveness at each
15 layer -- and, by the way, this is an example; that is all it
16 is, but we have very real possibilities of building to that
17 level at this point; it is quite clear that it is possible --
18 instead of just one or two, or three additional missiles, we
19 are talking about 293.

20 It is impossible for them, within their economic
21 constraints, to deal with a layered defense by doing precisely
22 that. Therefore, they would -- they are logical people on the

1 other side. They are logical adversaries. They would pick the
2 approach that would not break the bank for them.

3 MR. PERLE: If I might add to that. The question
4 accepts implicitly the notion that the Soviets insist on having
5 offenses at the level that they now have them, and that they
6 would not be content with any lower level of offense
7 capability.

8 Yet, as we look at the Soviet offense force --
9 thousands of warhead on ballistic missiles, in particular --
10 many of us believe that that force is vastly larger than the
11 Soviets need for deterrence.

12 If that is the case -- and, by the way, the Soviets
13 themselves said that they would be prepared to reduce their
14 forces -- if, in fact, the existing Soviet offense is excessive
15 to their needs over and above what is required for deterrence,
16 then they would need not respond to the degree to which all
17 that we were taking away from them was that additional and
18 quite menacing capability that I believe they are not entitled
19 to have.

20 REPRESENTATIVE MARKEY: Dr. Garwin and Dr. Sagan:
21 two minutes in rebuttal.

22 DR. GARWIN: It is not I who say that defenses are

1 destabilizing. It is the Reagan Administration, in explaining
2 the President's action. And I will just say it again: Unless
3 the defense is adequately survivable, it is likely to start a
4 war rather than prevent a war.

5 Unless it is cheaper to build than to overcome, it
6 will cause an offensive arms race. If you don't accept those
7 statements Secretary Perle, General Abrahamson, argue with
8 President Reagan, the Defense Department, and the State
9 Department.

10 What you appear to be saying is that you are
11 confident that you can satisfy those requirements. I see no
12 sign of that. I see, inside the SDI, a willingness to assume
13 away the threat; to make a straw man response; to fire all the
14 Soviet nuclear-armed interceptors simultaneously, because that
15 is least effective, rather than holding them for when the
16 targets are within range.

17 I see a continuing misconception that space mines
18 have to be covert to be effective, ignoring the fact that they
19 have always been proposed as overt. Once you find out that
20 there is a space mine that says I am a Soviet space mine, there
21 has been no proposal what to do about it.

22 It ~~is~~ ^{makes} no sense ^{to} say, We will find out it is a Soviet

1 space mine. So I believe that ignoring the requirement,
2 assuming it ^{away} ~~way~~, is the way to disaster. That is why I think
3 that the research in ballistic missile defense ought to be done
4 without an SDI organization.

5 DR. SAGAN: Let me just add, going back to what the
6 question asks, it is certainly clear that if the Soviets wish
7 to maintain a high probability of a certain fixed-level of
8 damage on the United States, and if they believe that a
9 deployed SDI will be able to shoot down a certain number of
10 their warheads, then there are several options open to them.

11 One is to increase the number of warheads until it
12 compensates for the capability they imagine for the U.S. SDI.
13 Since it is very likely that the capability to do that involves
14 existing technology, and would be much cheaper than SDI, we
15 give the Soviets the advantage in that issue.

16 In addition, the Soviets have opportunities to
17 underfly SDI. Even if SDI were to work -- miraculously -- it
18 doesn't touch ballistic missiles on depressed trajectories; it
19 doesn't touch low altitude aircraft; it doesn't touch cruise
20 missiles; it doesn't touch motor boats in harbors.

21 Finally, the Soviets have -- if SDI is deployed -- a
22 strong incentive towards decoys, and so-called penetration

1 aids. For all those reasons, the response to SDI available to
2 the Soviets looks to be cheaper and technologically readier
3 than SDI itself.

4 REPRESENTATIVE MARKEY: The next question goes to Dr.
5 Sagan and Dr. Garwin. That is: Science entails constant
6 technological advancement. Since SDI involves the pinnacle of
7 American technology, how can you -- as scientists -- justify
8 suppressing it?

9 DR. GARWIN: General Abrahamson said the work is not
10 science, it is engineering. What I want to do is to go back
11 into a much smaller program where science and imagination hold
12 sway. I wouldn't mind having a general program for reducing
13 the cost of everything we do in the Defense Department, as well
14 as in the government.

15 I think it is great if we can get this promise of a
16 \$5,000 inertial guidance system into production. I think it
17 would be wonderful to use it in our strategic offense ^{ive} missiles
18 as well as in the defense.

19 But that is not an SDI thing; that is a technological
20 thing. Science I am in favor of. Cheaper products I am in
21 favor of. I just don't think this ought to be done under the
22 mask of a long term response to the President's dream -- one

1 man's dream -- while delaying the near term accomplishments in
2 ballistic missile defense that we could obtain if we did not
3 have a research and development-only program.

4 REPRESENTATIVE MARKEY: Dr. Sagan?

5 DR. SAGAN: One aspect of SDI which I think has not
6 been mentioned it is important to not lose sight of, is that
7 when you wave \$1 trillion at the U.S. aerospace industry, and
8 scientists and technologists, you will produce what one general
9 officer described as a feeding frenzy.

10 What happens is that any such goal, whether it can be
11 accomplished or not, whether it is feasible or daft, deflects a
12 large fraction of the available U.S. scientific and engineering
13 talent away from other tasks, away from improving deterrence in
14 other ways, away from the conventional arms work. And
15 especially away from the civilian economy.

16 In that way, SDI can work to erode national security
17 in the broad definition of Dwight Eisenhower that I mentioned
18 before.

19 Just one other thing. I was asked at the time we
20 were to rebut by General Abrahamson, what was the connection,
21 he said, between education and SDI? Why do I put at the feet
22 of SDIO all of these underdeveloped nation qualities of the

1 United States that are getting increasingly distressing?

2 The reason is that all of those items I mentioned can
3 be addressed by money. Education can be addressed by money.
4 You say it is only a small fraction of the Department of
5 Defense budget, and an even smaller fraction of the Gross
6 National Product: yes, that is true right now.

7 But if you succeed in getting into a deployment
8 circumstance, then the budgets -- as everybody acknowledges --
9 go way up. So not only will money be taken away from
10 education, but scientific and engineering ^{talent} will be taken away
11 from education and from a civilian economy, and so on.

12 That is how all those items are connected with SDI.

13 REPRESENTATIVE MARKEY: General Abrahamson, Mr.

14 Perle: we will be a little bit lenient on the time you have
15 for rebuttal.

16 MR. PERLE: I am a little disappointed, I think I
17 have to say frankly, because I came here expecting I would hear
18 a spirited argument about SDI. What I think I am hearing is,
19 from the other side, nitpicking about how much money we are
20 spending.

21 They are for SDI; they are for having a strategic
22 research program. They just want to spend less money on it

1 than we do. If you believe Carl Sagan, we are going to lower
2 the infant mortality rate if we just divert funds from SDI into
3 I don't know what program.

4 The simple fact is that SDI is affordable and
5 manageable, particularly if one looks at the enormous
6 investment that we now make in offensive forces, and can look
7 forward to a future in which we can reduce that emphasis on
8 offensive forces, and use the consequent budget reductions to
9 finance SDI.

10 It is all very well to talk about a trillion dollars
11 in some future. But that is not the program that we are
12 operating. No request has been made for a trillion dollars.
13 Unless the research and development -- which is of much more
14 manageable proportions -- indicates to us that we have a
15 financially sound and technically competent program, there
16 would not be any proposal to deploy, much less a proposal to
17 deploy at a ^{tr} billion dollars.

18 I think we are being burdened with responsibility for
19 a program that doesn't exist. Yet, when it comes down to the
20 crucial issue -- which is the concept of whether it is wise to
21 go undefended -- I find that the other side has conceded the
22 point.

1 Both Garwin and Sagan believe we ought to have a
2 defense; they would just do it differently from the way we
3 would do it.

4 GENERAL ABRAHAMSON: In those differences, there are
5 quite a few differences -- as I commented earlier -- between
6 what is theoretically possible and what is operationally
7 effective.

8 Clearly I agree -- in fact, I am in violent agreement
9 with both of you -- that we must have a survivable kind of
10 system. Dr. Garwin raises one of his most favorite of all
11 kinds of issues: space mines. It is a serious problem. It is
12 one that we do deal with.

13 We deal with it very, very intelligently. We spend a
14 lot of time and effort working on it. He also knows that much
15 of it we are not allowed to talk about. However, let me just
16 deal with part of this issue, so that you understand the
17 difference between the way it is simplistically offered in the
18 theoretical sense and the reality of this particular kind of a
19 countermeasure.

20 I only offer this as one example. Often, Dick has
21 explained that an orbiting satellite, if it is an SDI
22 satellite, always goes in the same path. Therefore, it is easy

1 to put a space mine up there.

2 The image in your mind that comes out of that is
3 perhaps something like a Persian Gulf mine: that they just
4 kind of sit next to one of our satellites, and there it sits.
5 We don't do anything.

6 In fact, we make our satellites so that they can
7 maneuver. We give them hardening, so they can handle nuclear
8 weapons, at least up to a reasonable radius. Those areas are
9 ones we are making progress in.

10 Dick then says, Aha, but a space mine is simple;
11 therefore, you can put more fuel on, and you can always stay
12 with this maneuvering satellite. Let me tell you from my
13 experience, the last space shuttle mission that I had was the
14 first time that we repaired a satellite in space.

15 Crippen flew a very nearly perfect kind of rendezvous
16 with the Solar Max satellite, and it took nearly all the fuel
17 for maneuvering that the space shuttle had as we did it.

18 Secondly, that even if you can come into that
19 position, and the Russians have automatically capability to do
20 that, then the game is not even yet, even still. It is never
21 perfect. Once again, let me to go my experience as a fighter
22 pilot.

1 You have watched the Thunderbirds or the Blue Angels.
2 As they fly, it looks very smooth as they stay in formation and
3 move with the system. But I can tell you that the people who
4 are on the wing, the wing men are sitting there working like
5 mad, putting all kinds of control inputs into this.

6 The assertion that Dr. Garwin and the Union of
7 Concerned Scientists often make at the theoretical level is far
8 from the reality of the operational situation.

9 REPRESENTATIVE MARKEY: Thank you.

10 The next question goes to General Abrahamson and Mr.
11 Perle. That is, under what circumstances would you accept a
12 ban on the deployment of SDI, in return for deep cuts in Soviet
13 offensive weapons?

14 MR. PERLE: Of course, one has to define the terms in
15 order to answer that question. I don't know what is meant by
16 deep cuts. But the proposals that are currently being
17 discussed, in which offensive nuclear weapons would be reduced
18 to the order of 6,000, would still -- in my judgment -- leave
19 enormous scope for horrendous damage.

20 To go utterly undefended in the face of nuclear
21 forces of that scale would, I think, be dangerous and unwise.
22 I would certainly not agree to ban strategic defenses in

1 exchange for a reduction of that scale.

2 The President, at the Iceland Summit, proposed to the
3 Soviets that we would be prepared to delay the deployment of
4 strategic defenses until after a period of disarmament, during
5 which all the offensive ballistic missiles on both sides would
6 be eliminated.

7 He made the point, which seemed to me logical -- and
8 I hope this is responsive to the question -- that, in the
9 absence of strategic offensive ballistic missiles, no one would
10 have anything to fear from the deployment of the strategic
11 defense, since it would have nothing to shoot down -- unless
12 the other side cheated.

13 The Soviets -- flatly and categorically -- rejected
14 that proposal, giving some serious rise to the question: Why
15 are the Soviets so dead-set against the United States
16 continuing a research and development and testing program that
17 looks very much like their own?

18 REPRESENTATIVE MARKEY: Two minutes.

19 DR. GARWIN: I think the Soviets are so unhappy about
20 the U.S. SDI because they don't like to sign an agreement with
21 an insane partner. Because they think that the SDI will not
22 work against a Soviet first strike, and they ask what we want

1 it for. There is no real explanation why.

2 Let me quote Secretary Perle, back from 1973, in a
3 debate in which we both participated. He says, "If the
4 Minuteman is vulnerable, there is no need to fear that the
5 Soviet Union would actually launch such an attack. But the
6 political consequences would be dangerous."

7 How to get out of it? He said, "The best procedure
8 would be to defend strategic missile complexes with ABMs. The
9 effect of such defense on deterrence survival would be
10 substantial. As an alternative, however, we should press the
11 Soviets to bring their strategic forces down to the level of
12 comparable U.S. forces."

13 That is what we are talking about now. The 50
14 percent reduction would be only a first step toward much deeper
15 cuts. But those deeper cuts will not happen if the residual
16 forces are disarmed in prospect by the deployment of a
17 strategic defense.

18 I already quoted Secretary Weinberger as saying that
19 a Soviet SDI would be the worst strategic nightmare he could
20 imagine. Former Secretary of Defense McNamara, in the 1960s,
21 said if the Soviets deploy this nation-wide ABM defense with
22 5,000 nuclear-armed interceptors, we will build 50,000 nuclear

1 warheads to counter it if necessary.

2 The step-at-a-time defense is precisely the recipe
3 for increasing the Soviet offense force; and, at every moment,
4 increasing the potential destruction if nuclear war comes.

5 REPRESENTATIVE MARKEY: Dr. Sagan?

6 DR. SAGAN: I think we have to bear very clearly in
7 mind what would our response be if the Soviets were developing
8 an SDI system of the sort that we are talking about, and we had
9 to face the possibility that what they had in mind was a
10 devastating first strike against the United States, with their
11 SDI system used to mop up the residual, retaliatory capability
12 of the United States.

13 That is precisely the circumstance that they have to
14 face with SDI. They are quite properly worried about that, as
15 we would also. Therefore, there is the makings of a bargain
16 here. Each side forgoes SDI, and is at least freed from that
17 concern about a devastating first strike.

18 We have before us an historic opportunity -- it may
19 not occur again -- for massive reductions in the strategic
20 arsenals on both sides. Considering the absurdly large number
21 of such weapons, it would be foolish not to take advantage of
22 that opportunity.

1 REPRESENTATIVE MARKEY: The next question is to Dr.
2 Garwin and Dr. Sagan.

3 Richard Perle has stated that there is evidence of an
4 overwhelming level of Soviet SDI research. Do you agree that
5 it is possible to document the level of Soviet SDI-type
6 research?

7 DR. GARWIN: I heard Ambassador Warren Zimmerman, in
8 the fall of 1985, to a group about this size, explain that the
9 Soviet Union put about 50 percent of its military budget into
10 strategic defense.

11 That sounded extreme, and somebody from the audience
12 asked whether he was sure, and what was his source. He said,
13 after thing, Yes, he was sure, and his source was a recent CIA
14 study about which he couldn't say anything more.

15 But I happen to have with me the unclassified
16 testimony of Robert Gates and Larry Gershwin from June 26,
17 1985. They said that the Soviet Union spend about equal
18 amounts on strategic offense and strategic defense; together,
19 about 20 percent of their military budget.

20 So here this honest, capable man -- whom I knew
21 personally -- was misleading the audience. He said 50 percent
22 of the ^{Soviet} military budget goes to strategic defense. The number

1 in the document he was quoting was 10 percent.

2 I have no reason to doubt that the Soviets spend \$30
3 billion a year, in our money, on strategic defense. But that
4 includes their vast air defense program, operating 10,000
5 radars, 10,000 interceptors, 3,000 fighter aircraft; their
6 civil defense program, with \$3 billion a year, or so; the
7 operation of their permitted ^{ABM} system around Moscow; and, yes,
8 some research on SDI.

9 The answer to which is not a U.S. defense, but our
10 countermeasures program, which runs at about one part in 20 of
11 our current SDI program. That is not a countermeasures
12 research program; that is a countermeasures deployment program.

13 I am not troubled by the Soviet SDI. They have a
14 very substantial effort in numbers. If you believe in numbers,
15 then you really ought to worry about the agriculture gap,
16 because we have two percent of our people on the farm, and they
17 have 30 percent.

18 [Laughter.]

19 REPRESENTATIVE MARKEY: Dr. Sagan?

20 DR. SAGAN: I would just like to underscore the
21 fuzzing that is often done by American spokespersons, between
22 Soviet anti-missile defense, and Soviet strategic defense --

1 which is largely Soviet anti-aircraft defense, which in turn is
2 due to the very great preponderance of U.S. strategic
3 intercontinental bombers over the not-comparable, much less,
4 Soviet force.

5 REPRESENTATIVE MARKEY: Mr. Perle?

6 MR. PERLE: I hope those of you who were listening
7 caught the word "Yes" buried down deep in Dick Garwin's answer.
8 Yes, he said, the Soviets do have a strategic defense
9 initiative. It doesn't trouble him. But the fact that they
10 have one certainly ought to lead us to the question of whether
11 we can afford to be without one.

12 Carl Sagan wants to make sure that nobody
13 misunderstands the statistics about Soviet defenses. In order
14 to make sure we don't, he has pointed out how much they spend
15 on defense against aircraft, and a variety of other defenses.

16 Dick Garwin used the figure \$30 billion. It is fair
17 to ask, isn't it, what does this tell us about the Soviet view
18 of whether it is right and proper and legitimate to have a
19 system of defenses.

20 As you listen to official Soviet spokesmen, who decry
21 the notion of defending one's forces -- and, indeed, we have
22 just heard the other side in this debate decry the notion of

1 mounting a defense. Look at what the Soviets are doing.

2 At every area in which they have been capable of
3 mounting a defense, they have done so. A defense against our
4 bombers; defenses, to the degree they can, against our
5 submarines; a variety of measures intended to assure that their
6 strategic deterrent can survive attack -- and, perhaps, to do
7 more than that.

8 We ought to be doing precisely the same thing, in the
9 most effective way we can, providing for defenses. On the
10 other side, they would have us do it entirely by relying on
11 offensive forces, and only those defenses other than SDI.

12 I think the only conclusion you can come to is that,
13 on the other side, they just don't like the SDI program.

14 REPRESENTATIVE MARKEY: That concludes the period for
15 questions.

16 Now we are going to go to concluding statements.
17 Each participant will be allowed three minutes for a concluding
18 statement. We will begin with Dr. Garwin.

19 DR. GARWIN: Secretary Perle is right. I don't like
20 the SDI program. It was born in fantasy, and was carried out
21 like the admirers of the Emperor who had new clothes.

22 We don't actually have to be naked to nuclear

1 weapons. We can wear a small amount of clothes. But what is
2 bad is to believe that you are fully covered when you are not.

3 I would like to take a little of my closing time to
4 point out that the leader of the SDI program has here given a
5 couple of comments which are not actually attributable to me.
6 He says I want to put nuclear weapons in the ground and blow
7 them up in the northern territories.

8 No. Not unless you believe the northern territories
9 are one mile north of each silo, where we would have a small
10 nuclear explosion which would never go off, because there would
11 never be an attack if there is an effective defense: the same
12 argument as the SDI makes, except that this would really be an
13 effective, countable defense.

14 He points out that the shuttle has great difficulty
15 maneuvering to achieve a position with respect to a satellite.
16 I am not proposing a manned, re-usable space mine. That is the
17 trouble with the shuttle.

18 It carries a very small, almost vanishing percentage
19 of its mass into orbit as maneuvering fuel. A space mine can
20 carry 50 percent, or 70 percent, as maneuvering fuel. It has
21 no other mission.

22 I really do believe that the SDI has to look at the

1 threat as it will come. ^{they think} If ^A that is the best kind of space
2 mine, a ^{manned} ~~man~~-maneuvering space mine, which costs \$1 billion and
3 carries a percent or two of maneuvering fuel, they don't
4 understand the space mine threat.

5 ^{one} ~~The~~ reason why it ^(SDI) will not be found to be adequately
6 cheap and survivable ^{is} ~~are~~ the fast-burn booster. The Soviet
7 built missiles, as did we, liquid fueled. If they go to solid
8 fueled missiles, which they already have, the number of
9 satellites which can participate in the attack on the missiles
10 in boost phase will drop from something like 13 percent to one
11 or two percent, with the missiles that the Soviets have now.

12 With the fast-burn boosters that the Fletcher
13 Committee considered, not a single one of the defensive
14 satellites could destroy a Soviet missile in boost phase.

15 The ~~other~~ ^{main} three ^A problems are space mines, overt space
16 mines; fast-burning boosters; and the third is nuclear-armed
17 antisatellite weapons which the Soviets already have. They are
18 called ^A ~~GOLOSH~~ interceptors.

19 They are deployed around Moscow. They could make as
20 many of them as they like. They would come up against the
21 defensive satellites at the time of a first strike, if you
22 believe there will be one anyhow, and they would destroy them.

1 They would carry decoys so that they could not be
2 injured by the small rockets, which are the defending
3 satellites' only means -- for the next 10 or 20 years -- to
4 destroy boosters.

5 In fact, it is unlikely that these warheads would
6 even been seen by the defensive satellites. So we really have
7 to look at this. We shouldn't look at it only in controversy
8 like this. We ought to get together and discuss these matters.

9 It would help if the SDI would read my papers.

10 Thank you.

11 [Applause.]

12 REPRESENTATIVE MARKEY: Now, for his concluding
13 statement, General Abrahamson.

14 GENERAL ABRAHAMSON: I think the important thing
15 about the entire is, number one, we both believe in some
16 defenses, some investment here. That is critical. There is a
17 complete difference about what it should be, what the
18 investment really and truly should be in.

19 Terminal defenses, or something that could be much
20 more effective, layered defenses. There is a great deal of
21 difference between the assessment of progress and, perhaps most
22 importantly, about where we can potentially go.

1 The difference is that these are criticisms which are
2 aimed at the potential of the future, where we have thousands
3 and thousands of people across the country who are out there
4 making the changes, and making the future happen. So that,
5 when a deployment happens, it will indeed meet the criteria
6 that the President outlined.

7 Those criteria are very clear. We haven't projected
8 any kind of a difference from those criteria. Those are, first
9 of all, let it be militarily effective. Second, that it be
10 survivable. Thirdly, let it produce arms-race stability by
11 making it less expensive to build one of these systems than it
12 is to counter it by building more of the same.

13 I would like for you to imagine just a little bit --
14 Dr. Sagan introduced an imaginative picture here -- think of
15 what an SS18 truly is. It is about nine stories high; it is a
16 huge machine. It weighs nearly half a million pounds.

17 Just the raw material and the cost in that particular
18 system is immense. We are working now for these space-based
19 interceptors. Not exclusively only on space-based
20 interceptors, but on those systems that will be something about
21 three feet high, and that will weigh on the order of 150 to 175
22 pounds.

1 Will that be cost effective at the margin? There is
2 no question. Just from the overall kinds of technology, and
3 the differences that we can produce, that we are working in an
4 area where we have an advantage.

5 We will not bring forward a proposal to deploy until
6 it makes sense, until it meets those criteria. But I can
7 assure it is happening very, very quickly.

8 Regarding Dr. Garwin's point, we are working more
9 seriously on each of those countermeasures than he understands.
10 He has had access to many of the classified areas of the
11 program. I have specifically authorized him to go into some of
12 those areas.

13 I just leave you with one last challenge. For some
14 of your systems that you think are so effective, I would ask
15 for you to bring that proposal -- and operationally effective
16 proposal to me: a practical proposal that we can implement.
17 That is what we are working on. Not the theoretical
18 countermeasures, but the real countermeasures that can be
19 effected.

20 REPRESENTATIVE MARKEY: For his concluding statement,
21 Dr. Carl Sagan.

22 DR. SAGAN: Last week, there was a Harris Poll of the

1 American people concerning the negotiations on reducing the
2 budget deficit, which may or may not be concluded this week.
3 Eighty-two percent of the American people said that they did
4 not want social programs cut; 58 percent believed that
5 significant defense cuts are essential for deficit reductions.

6 These are very large majorities, considering the
7 enormous barrage of argument from the White House and their
8 supporters, for a need for a military build-up. Two trillion
9 dollars has been spent on the military since he has been in
10 office. I think it is remarkable to see the independent voice
11 of the American people on this issue.

12 It is true that the smaller the scale that SDI is
13 imagined, the cheaper it will be; and, therefore, the more
14 politically accessible it will be. If General Abrahamson and
15 Mr. Perle are saying that full-up population defense is only
16 one of the possibilities of SDI, fine.

17 It is a possibility. It is just not very likely, not
18 very cost-effective; and, indeed, very dangerous. If the
19 objective is some way to find another way of enhancing
20 deterrence, if it is to find a way to shoot down an errant
21 missile, let us find out how to do that without being burdened
22 by the President's vision of an overall population defense.

1 Star Wars is a highly porous system which cannot
2 protect the civilian population of the United States, even
3 without Soviet countermeasures. There are a wide range of
4 countermeasures available to them; the system can be
5 overwhelmed.

6 It can be underflown, overwhelmed, by adding more
7 warheads; underflown by delivering nuclear weapons by ways
8 other than high-arcing ballistic missile trajectories. It can
9 be outfoxed. It is an inefficient way to enhance deterrence.

10 It is ruinously expensive. It is likely to increase,
11 not decrease, the likelihood of nuclear war.

12 Except for all of that, it is a terrific idea.

13 [Applause.]

14 DR. SAGAN: I would like to see this Administration
15 devote some small fraction of the media time and bureaucratic
16 attention to explaining why it is important to reduce the
17 strategic arsenals in a massive, bilateral, intrusively
18 inspected missile reduction; and to be responsive to the
19 grotesque build up of nuclear weapons since 1944 up to the
20 present time.

21 Something which future generations, if there are any,
22 will regard with the same abhorrence that we regard the

1 institutions of human sacrifice, or chattel slavery.

2 In terms of simple planetary hygiene, it is essential
3 that we reduce those arsenals at least -- at first -- to a tiny
4 fraction of their present numbers, and to free the human
5 species from this specter of massive destruction.

6 [Applause.]

7 REPRESENTATIVE MARKEY: In conclusion, the responding
8 statement of Richard Perle.

9 MR. PERLE: I hope Carl Sagan, that perhaps when he
10 visits here in December, he will have the opportunity to make
11 that impassioned appeal to Mr. Gorbachev.

12 [Applause.]

13 MR. PERLE: We have had that on the table from the
14 earliest days of the Administration proposals to reduce,
15 radically, the strategic arsenals of both sides. I find it a
16 little curious the way this debate is taking shape. We are,
17 General Abrahamson and I on the one side -- respectively, a
18 long time public official and a professional soldier -- and, on
19 the other side, we have two scientists.

20 I was brought up to believe that science has a
21 method, and that method is that you identify a hypothesis, you
22 do research and experimentation, carefully collect data, and

1 ultimately to render some judgment about the validity of that
2 hypothesis.

3 The hypothesis before us today is whether SDI will
4 prove to be in the national interest. Us non-scientists on
5 this side of the table who have said, Let's collect the
6 evidence, let's do the research, let's record the results
7 carefully, and then, following the scientific method, let's
8 make a decision about whether we have accomplished a program
9 that is affordable and that is in our national interest.

10 That is not a question we can answer today. I find
11 astonishing the certitude on the other side of the table, first
12 that SDI won't work, and second, that there are a dozen
13 different ways to overcome it if it does work.

14 They also seem to be quite certain about what the
15 Soviets can do. Yet, if the Soviets take seriously their
16 judgment about the effectiveness of the program -- Carl Sagan
17 just said we can underswim it and underfly it, and outfox it --
18 they needn't respond at all, except by underswimming and
19 underflying and outfoxing.

20 They don't have to build additional weapons.

21 [Applause.]

22 MR. PERLE: Let me conclude by trying, for a moment,

1 to put this in some historical context. This debate is not
2 unlike a debate that took place in the 1940s, after World War
3 II, when Harry Truman was President of the United States.

4 Some of you will recall the debate in those days over
5 whether the United States ought to proceed to develop the
6 hydrogen bomb. It wasn't carried out in public; it was carried
7 out, in fact, in great secrecy.

8 The scientific community pretty much divided 90
9 percent against proceeding, and 10 percent for. The 90 percent
10 were led, you will recall, by Robert Oppenheimer, and a small
11 band -- 10 percent or so, led by Edward Teller -- said we
12 should proceed to develop the H-bomb.

13 The argument of the 90 percent was that if we
14 proceeded to develop hydrogen weapons, the Soviets would do the
15 same, and there would be instability and great danger. The
16 argument of the minority was that it was imprudent not to
17 proceed.

18 We now know that while that debate was taking place,
19 while Oppenheimer and Teller were making their respective
20 arguments, a young Soviet physicist by the name of Andre
21 Sakharov had already been assigned by Joseph Stalin the task of
22 developing the Soviet hydrogen bomb.

1 Had Harry Truman wanted to see the facts as they
2 emerged from the research, ^{had} and Harry Truman decided with Robert
3 Oppenheimer and not with Edward Teller, the Soviet Union would
4 have emerged in the late 1940s or early 1950s with a monopoly
5 of thermonuclear weapons.

6 I leave it to you to conclude how the face of the
7 globe, how the values that Carl Sagan and Dick Garwin and
8 General Abrahamson and I all share, might have been altered.

9 I hope we don't make the mistake that Harry Truman
10 refused to make, and believe that we can stop history and the
11 other side, just by wishing things were different.

12 [Applause.]

13 REPRESENTATIVE MARKEY: I would like to thank all of
14 the panelists for joining us here today. I believe that we
15 have had an excellent debate, exchange of ideas. I want to
16 thank our speakers, and I want to thank all of you who are here
17 for your participation in this important debate.

18 The Canon Caucus Room has never been as filled as it
19 is today, and I think it is a reflection of the importance of
20 the issue that we are debating that it was able to draw this
21 kind of attention across Washington; and, in fact, people from
22 across the country who came in here today for this debate.

1 I would like to thank the staff of SPACEWATCH, who
2 put together this forum here today.

3 [Applause.]

4 REPRESENTATIVE MARKEY: They consist of Eric Fersht,
5 Cynthia Kelly, Patrick Tracey, Katherine Magraw, Arthur Klein
6 and Dan Charles. I think they did an absolutely splendid job
7 in organizing a debate of this magnitude.

8 I would also like to use this opportunity to allow
9 for some closing observations on the future of the Star Wars
10 proposal. I believe the year ahead of us is going to be a year
11 of reckoning for the Strategic Defense Initiative program.

12 Between now and December of 1988, the President, the
13 Congress and the American people have some important decisions
14 to make about Star Wars, and about national security:
15 decisions which ultimately should be based on a determination
16 of whether or not Star Wars is in the national interest.

17 The President has to decide whether he is willing to
18 accept some limits on Star Wars, in return for deep cuts in
19 Soviet strategic nuclear arms. Congress has to decide what
20 level of funding it wishes to provide for Star Wars, and
21 whether to limit Star Wars testing in order to ensure continued
22 adherence to the traditional interpretation of the ABM treaty.

1 The American people have to decide on who will be our
2 next President, and whether they want an Administration
3 committed to Star Wars testing and deployment; or one committed
4 to preservation of the ABM treaty, and willing to discuss
5 limits on the exotic technologies of Star Wars.

6 How these decisions will come out is anybody's guess.
7 But I think, in today's discussion, we have had a chance to
8 look at some of the questions that must be considered before
9 our country commits itself to proceeding with Star Wars testing
10 and development.

11 Questions like, Will Star Wars work? Can it ^{be} outfox^{ed},
12 overwhelm^{ed}, or be outflown? Will it make our cities and
13 populations safer? Or will it only defend our missile silos
14 and military command centers?

15 How much will it cost? Can it meet the Nitzsche
16 criteria of cost-effectiveness at the margin? Will it usher in
17 a new strategic relationship based on defenses? Or will it
18 destroy prospects for arms control, and touch off a strategic
19 offense and defensive arms race?

20 Underlying these questions is a more fundamental one:
21 Should we put our faith in technological solutions, or should
22 we seek political solutions -- negotiated solutions? Congress

1 has decided this year to limit the Star Wars funding to no more
2 than \$3.9 billion, and to prohibit any testing outside the
3 traditional interpretation of the ABM treaty.

4 That gives enough time for our next President to make
5 the decision on whether or not to go ahead on Star Wars. One
6 of the great things about our system of government is that the
7 people decide who they want to have serve as their leaders, and
8 what direction they want the country to move towards.

9 The final decision on who our next President will be
10 is in the hands of the people who are in this room, the people
11 who are watching this broadcast, and millions of others across
12 this country. They will be choosing a new Administration to
13 begin serving in January of 1989.

14 You, and the people like you, will determine who will
15 sit in the Oval Office, and who will sit across ~~from~~ the
16 negotiating table from General Secretary Gorbachev. In making
17 that decision, I would hope that very serious consideration
18 would be given to the issues that we have discussed today:
19 whether Star Wars is in the national interest.

20 If you want to continue to be apprised of
21 SPACEWATCH's program, of debates throughout the coming year on
22 this and other issues, please contact our staff immediately

1 after this proceeding, and we will be more than willing to put
2 you on our mailing list.

3 If you have any ideas in terms of how we can frame
4 debates for public discussion, please come forward with those
5 ideas as well. We need the input of all sides if we are, in
6 fact, going to be able to frame this debate in a way in which
7 the election of 1988 will reflect the informed citizenry that
8 we really have to have.

9 Once again, I want to thank our panelists: Dr.
10 Garwin and Dr. Sagan, General Abrahamson and Richard Perle. I
11 think they all did an excellent job, and we thank all of you
12 for your participation.

13 [Applause.]

14 [Whereupon, at 3:00 p.m. the debate ended.]
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