



Raketenabwehrforschung International

Hessische Stiftung Friedens-
und Konfliktforschung (HSFK)

Peace Research Institute Frankfurt (PRIF)

Bulletin N° 21

Supplement
Winter 2000/1

Forschungsgruppe
Rüstungskontrolle
und Abrüstung
(Leiter: Prof. Dr.
Harald Müller)

Koordinations-
gruppe
Raketenabwehr-
forschung
Leiter: Dr. Bernd W.
Kubbig
Martina Glebocki
Mirko Jacobowski
Dr. Rudolf Witzel

In
Zusammenarbeit
mit der
Arbeitsstelle
Friedensforschung
Bonn
(Leiterin:
Dr. Regine Mehl)

Mit Unterstützung
der Evangelischen
Kirche in Hessen
und Nassau
und der
Berghof Stiftung
für
Konfliktforschung
GmbH

Bernd W. Kubbig (HSFK):

Systematic Analysis of the Answers of APS Members upon APS's President Robert Wilson's Request to Convey him their Views on SDI

Epilogue: „Grab your life preserver, it appears that we are to be drowned in a sea of paper.“ This flood in the APS's headquarter was sparked off by a guest comment by Robert R. Wilson in the August issue of „Physics Today“.¹ His plea to the APS members was put in a vague and cautious manner: He invited them to inform the APS in a short and straightforward letter or postcard about their views on the Strategic Defense Initiative and about the APS's stance in the SDI debate. The APS study on directed-energy weapons did not deal with the issues related to the deployment of missiles in space as well as the delivery of nuclear warheads by other means. Nor did the study address the implications of the military funded SDI research on basic research. But Wilson's greatest concern was that the APS Council did not reflect closely the views of APS members. He finished his article by stating: „Should I be drowned in a sea of paper, there will be a message even in that!“

Indeed, the APS received in the following months 167 letters from 169 scientists whose institutional affiliation could only be partly identified: 78 answers came from universities, 10 from members of the National Laboratories and 12 from physicists working in the industry. Many answered a question Wilson had not explicitly posed: Should the APS play a political role in the Star Wars debate, no matter for or against Reagan's program? In his guest comment Wilson only asked if the focus of the study had been too narrow, or if it should have dealt with the implications of the SDI for survival in the nuclear age. But unlike his vague questions, the answers were precise. More than three quarters² opposed the Strategic Defense Initiative, whereas only 20% of the respondents were supporters.

¹ Robert R. Wilson 1985: Guest Comment: What should APS be doing about SDI?, in: Physics Today, 38, 8, S. 9, 76.

² Not all the answers deal both with the APS members stance towards SDI as well their view of the role to be played by APS in the SDI debate. The percentage points only refer to the fraction of letters that refer to the respective subject.

Systematic Analysis of the Answers of APS Members upon APS's President Robert Wilson's Request to Convey him their Views on SDI

Table 1: (Conditional) SDI Supporters

<u>Stance towards the SDI</u>	<u>Political Aspects:</u>				<u>Technical Aspects:</u>
	<u>Suspiciousness towards the USSR/Nuclear disarmament with the Soviet Union impossible</u>	<u>Enhancing US security by deploying the SDI/Reducing the danger of nuclear war</u>	<u>Moral superiority of the SDI („Mutual Assured Survival“) compared with nuclear deterrence („Mutual assured destruction“)</u>	<u>SDI as an important bargaining chip in arms control talks</u>	<u>Feasibility and efficiency of the SDI</u>
pro	We can't trust the Russians to honor any agreements until they undergo a democratic revolution [...].				
(conditional) pro	I believe that what we have in the USA and western world is worth defending, and that the Soviet Union is an adversary worth standing up to, if there ever was one. [...]The Soviets' strength is the ability of any totalitarian state to forcibly direct a larger fraction of its GNP into military preparations.	[I]f it proves feasible, protect whatever we can – retaliatory forces and/or population – from nuclear missiles.			
pro			It is clearly better to protect our population than to destroy the USSR's. MAD is morally defensible only as a stop-gap before something better can be found.		
pro	Physicists have brought us the atomic and hydrogen bombs, now they can do what is necessary to render them impotent. This can be done via the SDI, not through arms negotiation with a nation which is determined to see our ultimate destruction	The SDI is a very important, necessary and visionary goal. [...] This vision of a post-nuclear world where our security is guaranteed not by some flawed treaty, but by our own substantial technological capabilities, is the only stable endpoint of the ever accelerating arms			Time, money, and the will to do it. I see no insoluble problems in achieving this goal.

		race.			
(conditional) pro			SDI is ill-advised and not feasible, but it has a deceptively attractive appeal: it is defensive and non-nuclear. Therefore it is equally ill-advised and futile for the American Physical Society to take a stand against SDI and purely technical ground no matter how sound is the argument.		
(conditional) pro		1. I seriously doubt that SDI can give us either a leak-proof population defense or even an effective missile defense against the present Soviet arsenal. 2. I think there is some merit in even an imperfect SDI system coupled with deep reductions in offensive weapons (down to a few dozen warheads).			
pro		Short of total and verifiable nuclear arms reduction and eventual complete nuclear disarmament, the most pressing issue is what kind of defense this country needs vis-a-vis the nuclear attack and offensive capability of the USSR.			
(conditional) pro		Missile defense to protect the nuclear second-strike capability of the United States could be cost-effective, and [...] it could tend under some conditions to stabilize the balance of power. Missile defense is not likely to make cities invulnerable unless arms control greatly reduces the number of offensive missiles [...].			
(conditional) pro		We have to accept that SDI is a long-term project not much less ambitious than the very colonization of space.			

		[...]It would be lovely if SDI could be done as an international effort, under the auspices of the United Nations.			
pro		Nuclear disarmament is just a sound wave in the air: no such thing exists or ever has. It is far less likely to ever exist that perfect SDI! Thus one is driven to SDI as the first, best hope for mankind.	[T]he future must become dominated by non-nuclear defense!		
pro		To have no defense corresponding to Soviet space weapons simply because a scientist says „It can't be done“ is lunacy.			
pro	I favor SDI. The USSR isn't the only threat in the future. [...] Also, the USSR has an SDI already. If they didn't think it would work, they wouldn't be so concerned about it.	It would be better to stop a limited attack by a smaller power than to suffer the destruction of some of our cities.			
pro		What space weapons does the USSR government have; deployed, tested, and under study? [...] What weapons do we have in the same stages [...]?	If SDI does not g[ua]rantee peace.....will MAD? If SDI is no good, how good is the alternative?		
pro		The proposed goals of SDI are worthy and desirable.			
pro		I personally feel that SDI is a very positive first step in attempting to provide some protection from the nuclear nightmare that presently hangs over us. [...] I see SDI as at least a start in the dynamic process of trying to reduce the threat of nuclear weapons. [...] The problem of nuclear weapons must be attacked from all angles; SDI is certainly approach.			
pro		I do not believe that disarmament and negotiation were making satisfactory progress.			
pro		In my opinion, SDI is vital to the nation's defense and is infinitely preferable to a policy of mutual assured destruction.			

pro		No absolutely perfect shield can be made and some form of nuclear attack will always be physically possible. But what SDI should be is a serious search for a way to remove the hair-trigger from the armaments of total destruction.			
pro	[... A]s long as we have an adversary as deceptive as the Soviets, we must be prepared to defend ourselves.	The SDI program will improve the defensive capabilities of the nation.			
pro		Defense can be stabilizing, and deterring.			
pro		Just think, Star Wars concepts may make wars either obsolete or be fought away from the earth where no one would be killed. That sounds a lot better than going back to „conventional warfare“.			[...] I am confident that some „worthwhile“ defense results will emerge from the many different experimental and theoretical efforts.
pro				Meaningful defense may (probably) be infeasible but SDI may become the biggest bargaining chip in history.	
pro	All free people are threatened today by a strong and aggressive Soviet Union. Time and time again the Soviets have used their might to bully their way around the world. [...] Do we want to stake our future on the Soviet Union upholding a treaty – should we depend solely on their word? NO. We must protect ourselves: economically, politically, and militarily. The Soviets are scared of SDI.				I say „Let’s do the research, and see how impossible SDI actually is.“
pro					I believe that the current „star wars“ view of anti-missile defense will be replaced by much less expensive, much more effective and reliable concepts as a result of

					further research.
pro			My personal view [...] is that we finally have reached a moment in history when our attention is being turned to preserving, rather than destroying to a global, rather than a regional diminution of fear for nuclear weapons. [...] With an SDI [...] this trend can be continued.		
pro		Many people who attack the President on this are really more upset about other things; for example, about the domestic policies of the Reagan administration. The President has made an innovative proposal. [...] Even if SDI turns out to be impractical scientifically, I would have to say that its political effects to date have been positive rather than negative.			
pro	[...] America has no option, but to vigorously pursue a survivable deterrent which will be solely accomplished by the successful resolution of S.D.I. studies.	If we [...] further improve S.D.I. to 90% the Soviets would have to spend \$5 [...] Trillion as contrasted with our one \$ trillion estimated expenditure on S.D.I. thus S.D.I. is more than cost-effective, and is strategically critical to the survivability of the free-world!!!			
?		Since I believe it is important, in today's world, to know what can be done, and how, the research phase of SDI should be pursued. However, I have serious doubts that the defense value is worth the price of deployment [...].			
pro		One misconception is that a defensive arrangement need be 100% perfect to	The SDI is a long-range R&D program designed		

		be effective, this is not so and never has been [...].	to investigate new techniques and technologies that can provide the hope for an effective alternative to MAD and „launch-on-warning“.		
pro	No factual disarmament is probable with cheaters, liars and murderers climbing to the top of dictatorship.				SDI has a great potential [...] to expell nuclear explosives into interplanetary space. that alone is worth the effort.
pro			[... W]e should not confuse the human propensity for war with the inclination for space research.		

Table 2: (Conditional) SDI Opponents

SDI	Political Aspects:	Technical Aspects:	Economic Aspects:	Science-Policy Related Aspects:	
	Acceleration of the arms race; increasing crisis instability, the danger of nuclear war and US first-strike capability; jeopardizing arms control negotiations and existing arms control treaties; poor substitute for diplomacy	Feasibility and efficiency of the SDI	Costs of the SDI too high; diverting funding and researchers from more productive scientific areas; reducing the civil competitiveness of the USA	Negative consequences: militarization, wrong priorities when allocating funds	Dangers for the academic freedom because of classification restrictions
contra	A Star Wars defense would be so costly in terms of [...] political and military stability, arms control prospects, [...] that it is a path which should only be taken as the last possible resort. Our efforts must be bent toward containing and reducing the arenas in which the U.S. and U.S.S.R. compete militarily – not expanding them.	A Star Wars defense would be so costly in terms of [...] reduced times for reactions. [...] It is important for Americans to realize that its best scientists do not always think that the best solution to a security problem is a technological fix. In this case, it is probably the worst one.	A Star Wars defense would be so costly in terms of money, [...] and industrial distortions [...].		
contra	I believe that the most compelling arguments against the weapons suggested by SDI are still the same as those that prompted us to sign a treaty banning even the development of such weapons. They seem (still) to be ultimately destabilizing militarily [...].		They seem (still) to [...] be destabilizing economically.	I do not buy the arguments that SDI should be supported simply because the program will pump money into science (especially physics) in general.	
contra	SDI will stimulate the arms race and make the world less safe rather more so [...] SDI represents the violation of treaty obligations [...] SDI represents an attitude of dependence on military solutions to a basically ideologically problem, an attitude which weakens America.		The money spent will further imbalance the budget and/or be taken from other areas	It will hasten the militarization of science.	
contra		[... T]o me the concept is so obviously faulty that I cannot understand why its			

		shortcomings are not evident to everyone, especially to SDI's technically qualified proponents in government, that is, the President's advisers and to congressional supporters.			
contra	The facts thus far seem to show overwhelmingly that SDI will be a hopelessly incomplete defense, will accelerate the arms race and thus increase the threat of a holocaust, and will cost a bewildering amount of money.		
contra	I am morally opposed to the concept of SDI. [...] I side with those who consider it [SDI] technically unworkable, that the opposition will be able to match any substantive increase in defense with an offensive countermeasure, that it is a destabilizing concept that can only heat up the arms race.			[...] I sadly view SDI as one of the few politically viable methods of financing certain research. I almost think of it as a welfare program for physicists.	
contra	I am opposed to SDI. Technically and politically. [...] The attempt to begin SDI is another round in the arms race, which we do not need. [...] It is as blatant a challenge to the USSR as was the start of work on the H-bomb.	[A]ll beams, parical or radiation, are too inefficient in generation to become effective weapons. Missiles are the only way in practice to destroy other missiles. And they are too easily fooled, or „drowned“ or otherwise foiled.			
contra	I do not want my wife and myself, or my children and grandchildren, to be hostages of a real-time computer program of unimaginable complexity, beyond the reasonable control of anyone on a policy-making level.	[SDI is] beyond the possibility of realistic testing.			
contra	I believe that there is no technological „solution“ to the superpower nuclear confrontation. [...] SDI is just the latest crazy idea [...].				
contra	I do not believe that strategic defense can work or is even desirable. I worry that [...] a false sense of security or a belief that now we have a way of minimizing our los[s]es in a nuclear exchange will resurrect the notion that nuclear war is winnable. The				

	unthinkable will no longer be so. This would lead to disaster.				
contra		[SDI is] misguided.			
contra	[...] I am deeply concerned over the adverse effects of SDI on arms control and reduction talks.	I am sceptical of the technical feasibility of any SDI scenarios I have heard described [...]. I do not oppose laboratory advanced research on physics related to SDI but I do oppose „testing“, development, and deployment.			
contra	[Arguments against SDI] include warning for an inevitable and qualitatively new round of arms race, SDI's inherent lack of safe protection, [and] SDI's complete inapplicability for European defense [...].				
contra	[...] SDI is <i>not a defensive system</i> at all, but an offensive one. It has so little chance of working in a defensive situation, that its only real value could be in enforcing the US's growing first strike capability.				
contra	It cannot provide an astrodome defense against a determined and resourceful enemy. [...] SDI is at best a distraction with respect to the important goal of negotiated mutual reduction of the number of deliverable nuclear warheads. At worst, and more likely, it will induce increases in ICBM's, SLBM's, etc., leading to increased chance of accidental commencement of hostilities [...].	[...] SDI will rely on pop-up systems, thus leaving so little time for decisions that they will be made by computers. [...] SDI research on both sides is harmless provided that „research“ is limited to ground-based laboratories and does not involve blowing things up in space. [...]			
contra	[SDI is an extremely dangerous program for the security and general development of the country because of i]ts destabilizing effect on the „arms race“.			[SDI is an extremely dangerous program for the security and general development of the country because of i]ts distortion of the development of science in this country [and i]ts distortion of the utilization of scientific manpower in this country.	

contra	The Soviets will almost certainly respond to S.D.I. with more nuclear missiles. S.D.I. will escalate the arms race.	It is extremely unlikely to work [...]. The anti-satellite weapons (ASAT) to be developed in co[n]junction with S.D.I. are terribly destabilizing.	It is [...] very expensive.	S.D.I. poses severe threats to academic freedom, and could well lead to a politicization of science in American universities	
contra	Perhaps most importantly, the whole SDI concept is dangerous.		Basic economic sense says that spending such large amounts of money on a non-productive area means less will be spent in providing products, services and research for the country as whole.		
contra	Since the United States is the driving force in this new escalation of the arms race it should be easy to negotiate a ban on testing Star Wars subsystems.	Relying on huge computer codes to determine whether we shall fight a nuclear war makes me extremely uneasy.	The SDI will further divert technical manpower from scientifically, economically and socially more useful channels.		
contra		SDI will be obsolete long before it is deployed. [...] We have never designed a defense which could not be defeated by a change in the offense. [...] SDI is already obsolete. It cannot deal with the air breathing missiles and aircraft which are already in the Soviet inventory.			
contra			I oppose the overall antimissile program, although I do think that we should continue research at a modest level.	[...] It will channel activities in certain directions, none of which presently hold particularly bright promise.	

contra	[...]In no way will SDI result in complete safety for the public. Emphasis on this will help to save the public from being victims of a cruel and dangerous delusion, and to prevent the Pentagon from basing its plans on totally unrealistic premises.	[...] I regard the SDI program as a naive and infantile venture, based on simplistic ideas about technology and on a childish urge to spend a lot of money on new military toys – handing out jobs in every electoral precinct – and building costly gadgets that will be obsolete in ten years.		
contra	I believe the administration is lying to the American people about the goals and capabilities of SDI.			APS membership should be made aware of the pernicious effect of SDI funding on the Physics community.
contra	[... T]he prospects for a nearly perfect defense are so remote that they should not even be relevant to public debate about US nuclear policy. [...] Proceeding at high funding levels for SDI research and development seems certain to doom not only any chances for success in the current negotiations in Geneva but also for the ABM Treaty.	To me the most devastating argument against the SDI is that the numerous countermeasures are likely to be easier and cheaper.		
contra		A defensive system is clearly useless if the countermeasures (decoys, etc) and „anti-defensive-weapons“ weapons (ADWs) needed to overcome it are easier and cheaper to build than the defensive system itself, since the offense will always have the advantage in this case.		
contra	In my opinion SDI is a major escalation of the arms race, and therefore a very bad idea.			
contra	I think it [SDI] will accelerate the arms race and make the world a more dangerous place to live.			
contra	This fairy tale was picked up by powerful interest groups and now, unfortunately, Star Wars has to be taken seriously. These ‚pushers‘ are primarily those who financially stand to benefit. The famous military industrial complex, and academia is not lily white either. Secondly, the ultra right, that sees SDI as a mean of shedding unwanted treaties, and generally, to toughen our stand against the Soviet Union.	[...]It is a gigantic and dangerous hoax. it was dreamt up by an actor, who on account of some strange occurrences happens to be the president. he has an amusing moralistic way of thinking, but doesn't know too much		

		about the world, let alone about scientific and technological complexities.			
contra	I strongly oppose SDI because I believe it will: lead to an open ended space militarization;[...] give rise to plans for survival of a chosen few of a nuclear war; lead to a massive increase in the number of Soviet ICBMs [...]		[...] it will [...] bankrupt an already sick economy [...].	[... I]t will take money from research projects with positive goals.	
contra				[... I]t seems to me that work should not be carried out under the umbrella label of research if knowledge is gathered that is specific enough to allow construction and possible deployment of at least part of the system in an internationally secret manner.	[... N]o classified work should be labeled research.
contra	The real questions are ideological and political: given these uncertainties, should we spend vast sums for a system that will inevitably accelerate the arms race?	We already know from previous technical studies that such weapons can be built and that they cannot be completely effective. Further, we cannot know how effective they will be without testing in a realistic environment, which cannot be done. Thus there can never be enough confidence for suspicious minds to forego offensive weapons.			
contra	[... I]t is not possible to successfully plan both a large expansion in our weapons system and bargain for a meaningful reduction in arms. [...] I believe that SDI is destabilizing.	The history of arms is one of successive advances in offensive and defensive weapons. We can expect that at best a defense against missiles w[ill] be temporary.	[...] I believe that in the not unlikely event of a large scale recession from large government deficits, the American public may refuse to continue the level of support required	I believe that SDI will have negative effects on both science and society, by the diversion of funds and manpower from other areas.	

			to implement a useful defense against missiles.		
contra	In my opinion the SDI concept will decrease, rather than increase, our security. It is not a scheme for protecting our country, it is rather a sneaky way to deploy more weapons.				
contra	[T]he net effect of SDI is another upward ratchet in the arms race.			Physicists who accept research support motivated by SDI should recognize the many dangers that are involved. The obvious are secrecy and other forms of military control, but the likelihood of pressure to do bad physics is perhaps more serious. Science requires the uncompromising pursuit of truth, but that is not a commodity held in high esteem in the centers of power in Washington, or elsewhere.	
contra	I think SDI threatens rather than enhances the prospects for peace [...].	[...O]n technical grounds alone we could reject SDI.			
contra	Even a 100% effective ABM defense will not provide security from nuclear attack. Any ABM defense system is g[ua]ranteed to provoke an escalation in the arms race.				
contra	I fear that SDI would be viewed by the Soviets as an attempt to defend against a second strike by them after we have eliminated most of their missiles with a first strike. Such a view could lead to a profound destabilization of the current uneasy balance of strategic weapons.	I can't envision any strategic defense system that is so impervious to countermeasures (the simplest of which would be to increase the number of attacking warheads) that it would be anything like 100% effective.			
contra	[SDI] endangers the security of useful satellite programs for communications, weather forecasting, earth resources, scientific research, and arms control monitoring. It threatens to accelerate the arms race – in both offensive and defensive weapons. It will probably destabilize the present balance of terror.	The threat of nuclear destruction cannot be eliminated with technical fixes.			

contra	I think we have reached a stage where only serious disarmament negotiations, carried out on the US side by politically neutral negotiators, can stop the arms race.				
contra	SDI should be opposed for the fundamental reasons that it will lead to a new arms race.				
contra	Gradual unilateral nuclear disarmament is the only salvation.		There is now no technical, military, or political justification for SDI, other than the feeding of US industry.		
contra	[... SDI] perpetuates and accelerates to an unprecedented level the armaments race that has been going on for several decades.	I personally believe that the SDI is scientifically unsound and overly expensive.			
contra	[T]he deployment of such a defense, especially to protect ballistic missile sites, will contribute significantly to an escalation of the arms race.	[...] I am extremely sceptical of the claims that an acceptable antimissile defense of population centers can ever be constructed, especially a defense against large numbers of cruise missiles.			
contra	[The Soviets} will increase their offensive weapons and build countermeasures for their defense, against our first strike.				
contra				SDI is [...] corrupting physicists, engineers, plus schools and other institutions,	
contra	[...] SDI is an invitation to an open-ended arms race which will be devastating to both the Russians and ourselves.				
contra	[... W]e should not put military weapons in space; we should terminate SDI, and reduce the possibility of nuclear warfare by agreeing to reduce the numbers of nuclear warheads on Earth.	[... E]ven if this defense system were effective against ICBMs, the offense can by-pass it with cruise missiles flying underneath, or by missiles from geo-			

		synchronous orbit or from the Moon.			
contra	[N]o defense effort [...] is capable of preventing vast and unacceptable destruction of the United States and its population as long as the Soviet Union continues to maintain its nuclear forces.				
contra	I expect S.D.I. [...] most likely to reduce our security from nuclear attack rather than improve it.		I expect S.D.I. to be very costly in [...] money [...].	I expect S.D.I. to be very costly in manpower [...]. It will likely have an effect on U.S. science and science policy.	
contra	[...] I feel an attempt at developing Sdi will inhibit the small chances we have already at successful nuclear arms reduction. [...] SDI] will only serve to increase the probabilities of a nuclear first strike.	[... T]echnically I believe a defensive system capable of protecting our population is impossible.			[...] I think our academic freedom will in the long run be hurt by allowing our research to be swayed so strongly by an immense push on our campuses.
contra	Stupid, Dumb, Idiotic.				
contra				The hasty operational methods for assigning contracts and the „high-pressure“ attitudes toward meeting technological goals [...] are both troublesome and unrealistic.	
contra		I am very concerned that the implications of SDI have not been considered thoroughly and certainly physicists should contribute to the analysis.			
contra	It is a dangerous and wasteful escalation of the arms race.				
contra	[...] It is supposed to be defensive but is most likely to lead to improvements in offensive weapons.	[...] It probably won't work so will be a waste of money.		[...] It puts too big a fraction of physics effort into a single problem.	
contra	I am strongly opposed to SDI on the grounds that its arms-race-destabilizing, crisis-destabilizing, and a waste of money.		
contra	In order for the Star Wars nuclear shield to be			Actually, both the U.S. and the Soviets	

	perceived as convincingly defensive, there is one precondition: the U.S. would have to reduce its nuclear arsenal well below that of the Soviets. That seems very unlikely indeed! But failing this, the Russians will feel vulnerable to a first strike.			have already been carrying on limited Star Wars research for some years. It is arguable that this low (and probably unverifiable) level should continue to avoid technological surprises, each from the other side.	
contra	[... A]ny such major DOD policy decision must be evaluated by its potential long term effects on the arms race and the risk of nuclear war. In this light the SDI is profoundly negative.	[... N]either a near perfect nor an undefeatable system can be developed even though huge sums are spent.		[... T]here are much more direct routes to realizing the benefits of these spinoffs, or that a different allocation of public funds might provide humankind with even greater benefits.	
contra		[... I]f the US has the postulate beam weapons, it should presume that the enemy has them as well. And if the enemy has them, would he not direct them [...] at the U.S. space weapons?	The economic war is [...] clearly won by the side that does not have to deploy weapons in space but simply disables its enemy's weapons from the ground.		
contra	SDI will cause an unnecessary, extremely large jump in cold war defense spending. [...] SDI is feasible only at extreme cost to the taxpayer in both money and restriction of freedoms due to security restrictions. Obviously I am strongly opposed to any form of SDI which goes beyond realistically matching present Soviet offensive capability.				
contra	The objectives of the SDI appear to be ludicrously infeasible while pursuing SDI's research goals may form a dangerous and costly new phase of the arms race.				
contra	The only way that people can live comfortably in the future is through a reduction in the number of weapons. [...] I don't see how any impartial observer can see this program as anything but an escalation of armament.	Even if scientifically possible, the problems of deploying power sources where they are needed and of their vulnerability seem overriding.			
contra				My opinion is that SDI is a lavish waste of human energy and natural resources. [...] I feel APS should encourage debate on the advisability of pouring these	

				immense sums of money into military hardware.	
contra	[...]It means a massive escalation of the arms race and a „limited“ nuclear war [...]. Fifty million casualties are fine with them if it gives them world domination!		By massively escalating the arms race, the Reaganites are directing huge sums of money towards their friends in the military industries and away from basic human needs, and even from America's long-term productive capacity.		
contra	SDI will expand the arms race into space, and in fact this has already begun. [...] Given the cost and time scale for SDI would it not be better to spend the time and money on finding non-military solutions to the arms race and arms control? [...] SDI is just another means for us to fool ourselves into thinking that our weapons and machines will keep the peace.	The SDI program is a very long term project. What do we do about arms control in the meantime? [...] The complexity of the SDI program is like nothing before, completely untestable in its entirety.			
contra	[...]It is casting the U.S. in a bad light as a militaristic nation.	[...]It can never work, [...] it is a tremendous waste of talent and resources, and the relatively miniscule spinoffs cannot compensate for its wastefulness nor in particular for its wholesale corruption of physics as an intellectual and social endeavor [...].			
contra				Because of the intense pressure to make the system work, we will be forced to use much less than ideal methods to achieve the desired end and our solutions will not work well or at all.	

				The second problem is that too many of our resources (money and people) are being concentrated on SDI. This will seriously hurt basic research in other areas and could cause even more difficulty as other countries move ahead of us in basic research.	
contra	[...] Its futile pursuit will only lead to a vastly expensive escalation of the arms race.	I violently object to the idea of leaving the attack decision to a computer program of unparalleled complexity. This program will have many bugs, and no realistic means of testing. The idea of a defense „leakproof“ enough to protect the general population is pure science fiction [...].			
contra	SDI has the clear potential for greatly escalating the nuclear arms race and destabilizing the present, admittedly undesirable balance of nuclear terror, while it provides no realistic hope of eliminating offensive nuclear weapons.				
contra					The research done at the University on a „Star Wars2 grant must be available for publication in the open literature. Researchers working on „Star Wars“ projects at a University must have no impediments to presenting their research at national and

					international conferences. The research must be open to foreign nationals since we have many graduate students of foreign origin.
contra	I consider S.D.I. to be a terribly dangerous, destabilizing programme because the U.S.S.R. will undoubtedly respond in kind or in some other way so again arms programme will escalate. Further, S.D.I. threatens the ABM treaty which is most undesirable. [...] I do not dismiss the possibility of it becoming a very dangerous offensive weapon in the hands of a future extreme administration.	I also consider the basic S.D.I. concept to be quite unrealistic and unattainable.		[...] I called on all scientists to reject S.D.I. related research.	
contra	I [...] believe that to use the star wars concept in a lesser way, for example, for the defense of missile sites, will only accelerate the arms race and decrease our security.	In my opinion, it is utopian to believe that the defense can completely triumph over the offense in the age of nuclear weapons		It will be hard for us to resist taking some of the large amount of government money that promises to come pouring in our direction, but we physicists must say no to this gigantic boondoggle.	
contra		In view of the possible countermeasures available to the Russians, I very much doubt that SDI could intercept 50% of the missiles [...].			
contra	There is every indication that the SDI proposal increases rather than decreases the risk of nuclear war.			The large sums of money for SDI will distort research in the USA (and any other countries that become involved) to the detriment both of advances in fundamental science and of useful applications. [...] I am nauseated by the self-deception and corruption that SDI produces in some of my colleagues [...].	
contra	[SDI] will generate at least two more decades of „arms race“ and probably decrease our personal security even more [...].				
contra	[... T]his project is a waste of a very large amount of				

	money at best and a cause for nuclear war at worst.				
contra		The government is on the verge of committing tens, maybe hundreds, of billions of dollars to build energy machines that violate the second law of thermodynamics.			
contra	I am strongly opposed to SDI because of the boundless high tech arms race it promises. [...] M]an has [...] thousands of years ahead of him in which outer space will be increasingly his element. We cross a profound threshold if we place destructive weapons in space now.				
contra		I believe SDI is a waste of precious resources because it will not work as promoted by the Reagan administration.		SDI is also unethical; the diversion of resources from human needs such as education to the giant military-industrial complex would be reprehensible.	
contra	I see a benefit of the SDI to the human society, in that it will use readily available military funding to promote activities whose side-effects will be or lead to exploration and utilization of regions off the face of the particular we now inhabit.	I have no question that it is possible to devise a weapon that is capable of defeating any other particular weapon [...]. Thus, the SDI will, in my opinion, satisfy its objective for only a limited period of time.		I see a benefit of the SDI to individual physicists, in the form of employment, funding and status.	
contra	The research and development of such a system, even when not deployed, may create a sufficiently unstable international political environment which will increase our chances of a nuclear exchange.		The technological developments needed for the SDI program may damage the country economically.		
contra		The point is that the uncertainties in the Star Wars/SDI project are so enormous that no one can say anything for sure about what will and will not „work.“ If			

		research on SDI puts a large region of near-earth space out of use for satellite orbits for 10,000 years, that may be the most important result of SDI research.			
contra	The President's S.D.I. is just another sad step in the futile U.S.-U.S.S.R. arms race. [...] No one expects S.D.I. to save cities and societies from destruction [...]. This administration [...] is paranoid [and] hence has no intention to discuss any arms control ideas seriously.				
contra		If the SDI concept has any value, it should be well grounded in basic physics before the country pours more funds into it.			
contra		SDI is [...] a massive project with many unanswered questions. [...] T]here should be 40 or so outside review committees.			
contra	[...] SDI is ill-conceived and dangerous.				
contra	[...] I do not feel it is even possible to achieve a nuclear shield of even good efficiency let alone the promised perfect shield. The SDI is only enabling a first strike response by us and not a protection from that first strike for our citizens.	It seems the SDI will only take resources, talent and money, from basic research and will not add to the general pool of both.			
contra	As more and more influential people realize the ultimate futility of SDI, its confusion of purpose, [...] and the very possible corruption of its management, the enterprise will collapse of its own weight.		[...] its enormous cost [...].	Public reaction to the collapse of SDI could be bitter, and it could be directed against, not the safety-promising politicians, but against hard working scientists for failing to make those promises come true, or against those earnest scientists who predict that SDI will fail, and refuse to work on it.	
contra	A race to get an effective defense will be highly unstabilizing, since if one country ever suspects that	SDI is highly unlikely to work on today's intercontinental	SDI will be disastrous for the		

	the other is about to be successful, it will be tempted to strike first.	missiles. If it should be made to work on them, there are many modifications which can be made to the missiles to counteract the defense.	economy, not only through the wasting of money, but also through the deflection of scientific and engineering manpower away from more productive activities.		
contra	A leaky defense is worse than none because it lowers the threshold for nuclear war.	[SDI] is ill-conceived scientifically and sociologically.			
contra	[... A] defensive system is more effective in supporting a first strike than in defending against one and is thus threatening to an adversary.				
contra		[SDI] seems to be very little esteemed on scientific grounds. Among the more often expressed criticisms are the need for 10^7 lines of error free computercode, the enormous power supplies needed for beam weapons, the simplicity of constructing „decoys“, and the fact that many components of the system will be untested until actual use.			Physicists are being used for political purposes, whether they like to admit it or not.
contra	If SDI should one day become a reality it is an illusion to believe that a result the world would become any safer. [... T]he awareness of the danger of such a system enerts a destabilising effect of the sensitive balance of mutual arms limitation strategies.	Up until now, the advances which the world super powers have gained in area of weapon technology have always been equal, the only result being that the balance is elevated onto a higher level..		[...]It is irrespon[sible], in view of the starvation in the third world countries to inject year after year the ideas, talents and enthusiasm of young scientists and untold amounts of money into more and more projects supervised by the military.	
contra	SDI is simply yet another step in the qualitative and				

	quantitative expansion of the arms race. Not only is such an escalation strategically and practically foolish, enhancing the security of no one (if not actually worsening the situation and destabilizing the current precarious status quo), but morally completely indefensible.				
contra	As a citizen of the US, I am appalled at the political consequences of the SDI program on relations between the nuclear superpowers, i.e. damage to arms control possibilities and the enhancement of the nuclear arms race.	I do not believe that any proposed scheme will lead to protection of the American population from missile attack.			
contra	We are frightened by a system that proposes the abrogation of the ABM treaty, one example of effective arms control negotiation. A safer world, in our view, can only come from negotiations which lead to a halt in the increasing production of faster and more accurate weapons. We feel that this road can only be reached via a comprehensive test ban, a ban on flight tests, and a ban on weapons in space, all of which we feel are quite verifiable.			As funds for non-classified research continue to dry up, the temptation to accept military funding can only increase.	
contra		The chances for a totally effective system seem remote.	[...] I really wonder if it is cost effective.		
contra	[...] SDI is a poor substitute for creative diplomacy.				
contra	Since nuclear first strikes are largely unthinkable already, the need for strategic defense is questionable. Also, strategic defense might make nuclear war more thinkable by placing misplaced hopes on defense.	Space-based platforms would be vulnerable from the same technology associated with ballistic missile defenses in space.			
contra		My main concern about SDI is not the issue of scientific feasibility, but rather the whole misunderstanding of the technology base from which it develops by both the scientific and nonscientific communities.			
contra?				If research on SDI puts a large region of	

				near-earth space out of use for satellite orbits for 10,000 years, that may be the most important result of SDI research.	
contra		[... T]he Strategic Defense Initiative [...] is a terrible 'boondoggle.'			
contra		The requirements for the SDI are, of necessity, so severe that they are impossible to meet.			
contra	It will be ironic indeed if we fail to take responsibility for judging whether a request to apply our knowledge will lead to a less stable, less certain world.				
contra	We must speak out and stop accepting weapon systems and more weapons systems as a way of life.				
contra	[... I]t is sheer fantasy to believe [...] that an umbrella could be erected over the free world. [...] The Soviets will never stand-by and allow the construction of a system which in their view could leave them defenseless against a US pre-emptive strike. Even the use of Star Wars research as a ploy to get the Soviets „to the table“ [...] is of dubious usefulness.	SDI in its proposed form is both ill-conceived and ill-advised [...].	[... T]he usual „spin-off“ effect of the research will, I feel, be negligible.		
contra		It is based less on analysis than in the view of many (too many of whom are scientifically illiterate) that Americans can do anything they want to if they only put their minds to it. (Forget the laws of physics.)			
contra	[... B]eyond the technical implausibility and beyond the economic burden of the Strategic Defense Initiative, lies a potentially even greater danger that a nation which invests in such a system poses a threat of a belief, either on its own part or on that of its adversary, that it might be positioning itself for a		[... W]e would surely cripple ourselves economically in our attempt to create such a system. And		

	„nuclear victory.“ Such a notion, entertained either side, is fundamentally destabilizing and could lead either to risk a first strike.		in so doing our society would become incapable of coping with the inexorably real problems of this century and next – population, food, differences in standard of living, sources of energy and preservation of a viable environment.		
contra	[E]stablish an international cooperative research program on strategic defense, with intimately mixed teams of American and Russian scientists and engineers. These would start with some negotiated elementary common technological capability, and build toward an agreed-on defense system. Full knowledge of progress would be available to each nation, solving the problem of verification.				
contra		My principal concern about ANY space based system is its vulnerability [...].			
contra	[D]oes the Soviet Union or other enemies of the United States pose such a threat as to require the SDI? [...] No.	[A]re our government’s goals of what SDI can provide and achieve realistic? [...] No.			
contra	[... E]ach would be driven to increase the number of its offensive weapons in order to overcome the defenses of the other. The arms race spiral upward and the climate for negotiating reductions would worsen.	Could an impenetrable defensive shield be built? Almost all the scientists who have studied the proposal believe it could not.			
contra		[... U]nder certain conditions major climatic effects similar to at least a mall-scale nuclear winter might occur.			
contra	If Star Wars goes ahead, it will lead to an arms				

	buildup unparalleled in history, and will seriously destabilize the present international nuclear situation. Instead of a road to peace and disarmament, it is a road to destruction!				
--	---	--	--	--	--

Systematic Analysis of the Answers of APS Members upon APS's President Robert Wilson's Request to Convey him their Views on the APS's Role in the SDI Debate

Table 1: Views on the APS Study on Directed Energy Weapons

<u>Institutional Affiliation</u>	<u>Mandate for the APS: „technico-neutral“ and/or political:</u>	<u>Justification for „technico-neutral“ and/or political mandate:</u>	<u>Attitude towards the APS Study on DEW Weapons:</u>	<u>Concept (including certain technical and/or political aspects), aims and distribution of the study/composition of the study group:</u>
		Support the SDI, for God's sake.		
Physicist (University)		[W]e should aggressively research SDI [...].	pro	
Physicist (University)				It is important for Americans to realize that its best scientists do not always think that the best solution to a security problem is a technological fix. In this case, it is probably the worst one.
		The physics community should support SDI [...].		
Scientist (University)			pro	[APS should e]stablish an ongoing committee to evaluate the major components of SDI, revising evaluation when new information is available, and constantly applying pressure to eliminate pieces of the program that seem unwise [. APS should e]stablish an ongoing forum that could report such evaluations; perhaps a column in Physics Today. APS should take the responsibility of seeing that such reports reach the relevant congressional leaders. For such evaluations, it would be of paramount importance to make sure that the scientific public obtains a realistic picture of what funds will be spent on, in particular, the level of applicability of the research that is to be funded.
Scientist (University)		I believe that the APS must take a strong stand in favor of this program. [...] Physicists have brought us the atomic and hydrogen bombs, now they can do what is necessary to render them impotent.		
Physicist (University)	political	[I]t is equally ill-advised and futile for the American Physical Society to take a stand against SDI and purely technical ground no matter how sound is the argument.	pro	The best way to deal with the issue is to invite the Russians to joint research on this „noble“ undertaking.

University			pro	I think there is some merit in even an imperfect SDI system coupled with deep reductions in offensive weapons (down to a few dozen warheads). [...] Perhaps the APS should investigate this concept, and if found worthwhile, tell us how we get there from here.
	political	I think that APS should be actively engaged in clarifying and publicizing the contradictions and fallacies, both technical and political.	pro	[O]pen debate should be engaged and inadequate or fallacious arguments exposed and countered.
Scientist, Xerox Palo Alto Research Center	political	It is we scientists who have given and will continue to give the world its weapons. [...] Societies like the APS stand in a unique position to give the expert and objective counsel that is called for in the face of these pressures.	pro	The APS should [...]: 1. Urge members to make their views known [...] 4. Seek and utilize every opportunity to counsel the Congress, the Administration and the Pentagon on weapons issues. 5. Begin to educate the public by holding news conferences and panel discussions.
	technico-neutral	I urge that the APS study be maintained outside political partisanship.	pro	[...] The APS study might address other elements pertinent to SDI such [as] early and reliable detection of an attack, effective communications systems, and an adequate second line of defense in case of an enemy attack penetrates the space defensive systems and reaches the U.S.
Oak Ridge National Laboratory	political		pro	APS should be studying the issue, as many other groups have been doing. Also, APS should find ways to help those institutions, increasing in number, that are refusing to do SDI work.
	technico-neutral	The Society should not be judgemental.	pro	
Physicist	political	Physicists [...] have a mass of experience [...] on just how badly wrong the most carefully constructed computer controlled experiments can go, even in the laboratory.	pro?	
	technico-neutral	The APS should be an apolitical body, and should therefore express no official opinions about SDI.		
	technico-neutral	APS statements and publications should emphasize technical problems. [...] If the APS issues political statements, the general public may underestimate the political diversity of APS members.	pro	
Physicist, Lawrence Livermore National Lab.			pro	I think that scientists and, hence, the APS have an obligation to be honest with the non-technical public and their representatives as well as with other scientists who do not hold clearances. The

				APS could help keep the debate honest.
Ph. D.	technico-neutral	[APS] should become the standard of scientific integrity in providing a concise, unbiased report to our political leaders of just how worthy the science of any project is.		
Physicist (University)		I do not expect the APS to take an official position opposing the SDI, at least not without an overwhelming consensus among APS members. More realistically, I would like to see the APS making a statement on ‚Star Wars‘ feasibility.	pro	
				I note that the military/Industrial complex is well represented in the study group.
Physicist (University und Xerox Palo Alto Research Center)	political		pro	The APS should expose that the US is building a primarily offensive system. The American Public has to come to understand that it is now supporting a military that has gone beyond defense.
Chemist (University)			pro	I am glad that the „scope of the APS Study“ gives mention, however brief, to „vulnerability and countermeasures“.
Physicist (University)	political		pro	[W]e urge that the scope of the present study be enlarged to include a critical study of the Fletcher Report [...].
Mathematician (University)	political		pro	I believe the A.P.S. should actively oppose S.D.I., and specifically 1) Work to inform the public, the Congress and the military that S.D.I. i[s] unworkable, destabilizing, and will escalate the arms race. 2) Work to unite universities in refusing to allow S.D.I. research on their campuses.
University	political	The APS should take a firm stand,	pro	... based on reports from OTA and GAO as well as its own study groups. The APS should join the Union of Concerned Scientists in giving expert witness testimony and in reaching out to the populace at large, through commercials, etc.
Physicist (University)			pro	The proper role of the APS is to help us lend our skills to the needs of the country and of humanity: Study SDI to weed out foolishnesses of which the government and DOD are so fond.
	technico-neutral	APS can encourage members to participate in politics and can supply them with the facts. Direct political action as a	pro	

		society will cause dissent among the members and may endanger our role as a tax exempt learned society.		
Physicist (University)	political		pro	I approve of the APS study, and am especially pleased that the committee's charge is broader than a purely technical review.
Physicist (University)			pro	APS can help stop space militarization by telling congress and the public what SDI can and cannot do, and at what price. [...] APS membership should be made aware of the pernicious effect of SDI funding on the Physics community.
Physicist (University)			pro	I would suggest trying to get a public television station to broadcast a forum involving members of the study group and of the APS Council. The APS could then arrange to make videotapes of the broadcast available to universities and other groups.
Bell Laboratories			pro	The APS should do all it can to promote rational discussion of the issue.
University	political	[...] In the event that the collective group (APS) becomes concerned about the world situation, particularly one so important to mankind as preventing nuclear war, then I think it should make its voice heard. We tear down the self imposed border that limits us to physics and behave, at these times, as natural philosophers.	pro	
Ph. D.		The APS should do all it can within the bounds of its charter to unmask this nonsense, called SDI.	pro	
Industrial Research Scientist	political??	[...] I believe that the Society should take as strong a position as feasible here.	pro	
Center for Accelerator Science and Technology			pro	What space weapons does the USSR government have; deployed, tested, and under study? [...] What weapons do we have in the same stages [...]? If SDI does not guarantee peace.....will MAD? If SDI is no good, how good is the alternative? [...] I hope to see your answers.
	technico-neutral	I think it [the APS study] is unnecessary, unacceptably narrow, and certain to be misinterpreted.	contra	Why are there seven members on the panel from weapons (or DoD supported) laboratories, but only one recognized proponent of arms control and no experts from groups such as UCS that are opposing SDI? On the other hand, if the panel's findings are negative, will they go unchallenged?

Physicist (University)	political	A feasibility study by the APS is important, but other political considerations are also important in determining whether SDI should be implemented even if it could provide a temporary nuclear shield.	pro	
	technico-neutral	Since the APS is not a political organization I strongly object whenever a stand is taken in my name by the Council on a political issue. If an issue cannot be resolved by scientific arguments or if a significant minority of members disagree with a Council stand, „the APS“ cannot have a view.	pro	
			pro?	It may be possible for a committee to come to an unbiased conclusion, if most of the members are tenured professors or older physicists like yourself. But how could one expect young physicists to give unbiased opinions about a program that will guarantee jobs in great plenty.
R&D Associates	technico-neutral	[... T]he role of APS in SDI be one of an independent, technically objective , even creative, referee, leaving policy implications to the citizenry through their elected representatives APS should not play any advocacy role whatsoever. To do so would undermine APS's technical credibility, serving neither the members' interests nor the country's. An independent voice, yes; an insolent one, no.	pro	
	technico-neutral	[...] I believe it is inappropriate for professional societies to express views on political and social questions. I think the APS should confine itself to the business of keeping physicists informed about physics and thereby be able to encompass without alienation members of all political persuasions. There is an adequate choice of other forums for APS members to express their political and social concerns.	contra	
	political	I think APS should concentrate on scientific facts and projections, their evaluation and interpretation.	pro	Honesty should be maintained and secrecy combatted. If this leads to an alignment on political issues, as is likely, the basis should be made clear and public statements should be as statesmanlike and non-partisan as practical.
Physicist (University)	technico-neutral	[P]hysicists (like other experts?) [should not] arrive at conclusions which reflect their political predilections rather than their technical expertise.	pro	
Chemist (University)				I [...] question whether the terms of reference for the APS SDI study committee are really the

				appropriate ones to stimulate the discussion needed to help the physics community deal with the question of involvement in SDI research.
Astronomer (University)			pro	I would like to see the APS investigate the proposals by Richard Garwin to defend missile silos, rather than population centers.
	political	I feel that it is important that the technical review be kept separate from the political debate. If this is not done, the technical review can be dismissed as biased, and the nation thoroughly needs a good technical review of the SDI problem. [...] I must add that it is equally important that the APS membership be involved in the broader issues. The arms control, economic, and foreign policy implications ought to be thoroughly aired and discussed by APS members.	pro	[...] cooperation with other organizations that could provide expert opinion on non-physics issues.
Astrophysicist	political	I also think scientists [...] should become aware of the possible horrendous consequences of their research, so they will not become another generation to be sorry. [...] Finally, since the MAD doctrine will not be abandoned any time soon, I think that its combination with SDI will be the final drop, unless we mobilize politically.	pro	
	political	[...] I support all APS activities which serve to raise the consciousness of scientists. Each of us should continually be aware of the significance of our work and understand the ultimate dangers of each position.	pro	
			pro	I hope the study underway focuses on realistic costs of realizable systems to expose this madness [...].
Physicist (University)	political	I believe that individual physicists and the APS as a whole should express opinions not only on the scientific issues involved in the SDI, but also on more general matters relating to its full implications.	pro	
Physicist (University)	technico-neutral	[... T]he APS has a duty to study the technical merits of all aspects of S[D]I [...].	pro	[A] great effort should be made to disseminate the findings of such studies to as wide a readership as possible, not to just members of the APS, or indeed, not just members of the scientific communities.
		[T]he critical problem, in my opinion, is political rather than technical; and the APS evaluation can exert a fateful influence on it. [...] Yes, I am against SDI. And I fear you can now do very little to change the situation.	contra?	

Industry	political	SDI is folly, the APS and other leading institutions of the scientific community have an obligation to convey that understanding to the people.	pro	Are we not working most efficiently when we first seek out the boundaries and basic aspects of a field rather than looking first to the details.
Physicist (University)	political	[...] I am dismayed by SDI and the blatant attempt by the administration to „buy off“ th[e]r most vocal critics, the scientific community. [...] It would be difficult for policy makers to ignore a clear signal from APS on the merits of SDI.	pro	One of the most important things which [...] the APS can do is to poll it[...]s membership on the question after the SDI study is complete; then to make VERY public the results of this poll.
Physicist (University)	technico-neutral	The APS study group should try to be as objective as possible in their evaluation of directed-energy weapons.	pro	[...] I am skeptical of conclusions reached by people who go into such studies with firm anti-SDI convictions, as those people would be of my conclusions were I to conduct such a study. The sources of funding for the study also make me skeptical.
NASA	political		pro	[...] T]he basic objections are matters of national policy, omitted from the scope of the APS Study.
University			pro	[...] I would like to see the APS study the total system; i.e., all delivery systems and all Soviet responses. Probably no one else is studying the total system.
Physicist (University)			pro	APS should study SDI at a technological level – as APS has planned. [...] APS should include „operations research“ on the complete system [...]. Studies should include error bars i.e. degrees of confidence in findings [...].
Physicist (University)	political?	I agree that too few physicists are speaking out on this issue.	pro	
Physicist (University)	technico-neutral	[...] P]hysicists' pronouncements on strategic theory of war have no more inherent expertise than a layman's.	pro	
University		There is so much uninformed and misinformed rhetoric about SDI, that I think it important that physicists and other scientists bring to bear their knowledge and expertise in as far ranging a manner as is feasible.	pro	[...] T]here is the matter of reliability, in particular computer reliability, an area where physicists and astronomers can speak with the force of experience.
University	political	I hope that some of the key societal issues will be addressed as well [...].	pro	
Physicist (University)			pro	I wish they would also study the nuclear explosive for the X-ray laser.
Chemist (University)	political	[...] I support your efforts to encourage members of APS to participate in both political and technical discussions	pro	

		of SDI.		
		I agree that physicists should speak out concerning the issues raised by SDI and that the APS and Physics Today should provide forums for the discussions.	pro	
	technico-neutral	Above all else, the APS must maintain its reputation for integrity [and] competence.	pro	
		Physicists should boycott the SDI Program.		
Physicist (University)	political	I feel insufficiently informed about SDI and hope the APS will provide information about technical feasibility, political significance, and manpower consequences.	pro	
Physicist (University)			pro	I think a balanced study is good, but make sure a readable, distilled version is made available to the public [...].
		[... T]he policy makers in Congress know not what they do because they are not getting a straight story from US scientists.	pro	
		Clearly publish what the feelings of its constituents are in national media. [... M]ake the APS membership opinion (again whether pro or con) clear to our nations Senators & Congressm[e]n.	pro	
		As a member of the APS I wish to see the results of the directed-energy weapons study be clearly stated and given wide publicity.	pro	
Physicist (defense industry)	political	[... I]t is important to encourage citizens to get involved with the public policy aspects of this issue even if they do not understand all the technical aspects.	pro	I also feel APS should do whatever it can to encourage scientific and perhaps cultural exchanges and seminars with all nations to help develop the sense of a world community.
Physicist (University)			pro	It would be useful if the APS DEWS study discussed how the various SDI systems would affect: crisis stability, battle management, possible Soviet responses to SDI, countermeasures to SDI, verifiability of SDI systems for possible arms control treaties.
	political	The Star Wars program is a political problem as much as it is a technical one. It is a promotion by the extreme right wing and the military industries, who have definite political objectives domestically and abroad.	pro	
	political	As physicists and members of society we have a duty to do more than just discuss and analyze technical issues, we have a moral responsibility to consider the policy and	pro	The APS should not focus its attention on purely the technical aspects of SDI feasibility, but rather examine how such a program would effect

		political impact of the work we do or support.		national and international arms control, the economy of the US and other countries, and scientific research in general.
University			pro	I [...] recommend that the APS push for the United States to spend at least as much money and devote as many resources (people and equipment) on basic research as goes into SDI.
			pro	I would urge that it [the study] be only the nucleus of a broader attack on the major related issues that your letter mentions.
				I hope that the APS formally supports SDI [...].
Physicist (University)			pro	I should like the APS to do a feasibility study of the whole star wars concept, not only of directed-energy weapons, and to take a stand on the issue.
	technico-neutral	In my view the APS should stay out of confrontational politics and stick to its jobs of pushing forward the boundaries of human understanding and of clarifying the potentialities and limitations of technology in the light of new knowledge.		
			pro	APS owes the American people their best advice.
Physicist (University)	technico-neutral	I encourage you to hold all emotional horses with regard to APS's response to SDI: [...] Insist on suppression of any polemic, political or philosophical remarks, [...] Avoid any [...] remarks of economic benefits, military (dis)advantages or the like. "We" must accept our rôle and position within society, namely, as dispassionate, objective pursuers of (not beholders of!) the truth. Anything less will make us less believable [...].		
			pro	Perhaps the APS could publish a condensed version of the APS study in layman's language [...].
Physicist (University)	technico-neutral	I think it is crucial to have an organization , which is essentially politically neutral, analyze the scientific soundness of SDI.	pro	I hope members of the APS would see it as their professional responsibility to do everything possible to stop a project of such dubious scientific merit. This responsibility may include actions that are political, such as taking out ads in prominent newspapers in order to educate the lay citizens of the country. [...] I encourage you

				to consider forming a study group to analyze the following, obviously political question: Will SDI, assuming it works as well as its most starry-eyed advocate hopes, help stabilize the arms race?
Physicist (University)	political		pro	I would like to see the APS extend its analyses of SDI [...] to SDI's short range impact on science research and on society. I would also like to see the APS take a stand opposing SDI, including research directly related to SDI.
Physicist (University)	technico-neutral	I believe the APS should provide a thorough technical study of the feasibility of SDI. [...] Although I believe SDI could be rejected simply on ethical grounds, an unbiased technical report would be much less political and thus more effective in eliminating SDI.	pro	This study should examine all aspects of the SDI system [...] in addition to examining next-generation lasers, particle-beam weapons and the like.
				My personal, unqualified, and indefensible vote is that the United States not develop this system, and that the APS not support its development.
	technico-neutral	While APS risks loss of membership by entering the political arena, the scientific study of the SDI program is a prime responsibility which must not be ignored.	pro	
Physicist (University)	political	[...] The important issues lie not so much in technical questions [...] as in the political, social, and economic realms.	pro	What the APS ought to do is to confront: the larger questions of Star Wars/SDI's interaction with the cold war; the extent to which scientists consider themselves free-standing professionals or hired guns; the role of science as a tool of electoral politics.
			pro	It's appropriate for the APS to analyze the possibilities [and] the limitations of S.D.I.
US Nuclear Regulatory Commission	political		pro	[...] APS should look at some other alternatives that are less technical in nature but could be far more effective in achieving the ultimate objective of no war, such as expansion of diplomatic, cultural, and educational initiatives.
Physicist (University)			pro	The APS should produce something more tangible than a promise of a report next year. Perhaps publicizing the physics community's response to your query would be helpful. Also, I would like to see an interim report of the directed-energy weapons study group. There should be provided a mechanism for providing a

				consensus on broader issues as well, as they relate to SDI.
				A.P.S. has only one choice to make, S.D.I. and Life, or no S.D.I. and death of civilization, and at least a billion human deaths.
Physicist (University)	political		pro	[... T]he APS report can and should be styled so as not to encourage a public rage against science. [...] Perhaps it would help us for APS to officially support a nuclear test ban treaty, or, if that is judged too daring, a poll of the membership [...] on the desirability of a nuclear test ban would still be helpful.
Physicist	political?		pro	[...] I believe it is important for the APS, and all other scientists, to present excellent, factual science. [...] I suggest a study group including historians, social and physical scientists. Religious and political leaders willing to accept changes should be consulted, if not included in the study group.
Physicist (University)			pro	The study [...] should be given maximum publicity, not only when it is completed, but also along the way: [...] You could send packets of information, on the physics involved, to high schools and colleges. [...] The APS might also address the questions of what this project will do to the availability of technical manpower and whether the putative „spinoff“ benefits will be worthwhile.
	political		pro	I believe the APS can play an effective role mainly by continually keeping the obviously flawed ideas in the public eye.
IBM Research			pro	The APS should be at the forefront of an effort to present a scientific view of the SDI to as wide a spectrum of the American public as possible.
	technico-neutral	[... A]ny statements should be limited to known or prov[...]able fact and avoid political content since that should be a function of the individuals who are members and the groups whose primary purpose is political influence such as the UCS.		The APS should not make or endorse any statement, study, or other form of comment now or in the future on SDI or any similar subject without hard data [...].
University	political	There is a widespread belief in the scientific community that physics is morally neutral and „above“ politics. [...]	pro	[...] strong public statements and testimony to Congress.

		O]n the issue of SDI, this belief has to be critically examined.		
Physicist (University)	political	In accordance with an idea from the 1950's, the APS should device a form of compulsion for physicists (similar to the Hippocratic oath for doctors), which states that physicists will no longer take part in any form of military research.	pro	
Lawrence Livermore	technico-neutral	The APS can do a great service by making a careful objective technical study of this proposed directed energy weapon, and evaluating the sales pitches made for it by supporters.	pro	I feel that it is very important that the APS study group not assume that the nuclear explosives to be used for pumping the proposed X-ray laser weapons will always be small.
Lawrence Berkeley Lab.			pro	[... W]hat will happen to the many researchers who, due to moral objections, are forced to leave research groups as the funding becomes military-related. Rather than fighting over an ever shrinking pie, debate must be focused on the ever increasing militarization of our field. It is here that the responsibility of the APS lies.
Lawrence Livermore	technico-neutral	A lot of non-scientific arguments have been advanced opposing the very principle of SDI. [...] The APS should not take up] such arguments, which in any case are inappropriate for a scientific society.	contra	
Engineer (University)	technico-neutral		pro	There should be a forum for discussion of the basic issues raised: should scientists try to force colleagues to withhold their services, because some perceive a dangerous, even „evil“ result of such services?
Ph. D.	technico-neutral?	I wonder a bit about the political neutrality of the whole endeavor [...].	pro	The APS study might try to project its likely effects on science and technology.
Physicist (University)	technico-neutral	[... T]he A.P.S. is an appropriate organization to provide an informed opinion on all relevant technical issues.	pro	The A.P.S. should strongly defend the fundamental need for good science to be open and critical. [...] Additional study groups should be considered as appropriate including addressing problems of deployment and delivery of weapons in space and the impact of funding at such a scale on the rest of research.
Physicist (University)	political	We are responsible for nuclear weapons [...]. We must [...] inform ourselves on the technical and political issues [...].		
Rockwell Int.			pro	[... T]he APS study should [...] clear the air and

				get the facts out on the table.
Physicist (University)			pro	I urge you to ask the APS study group on SDI to carefully look at the space debris that will be created by both research on and deployment of SDI. If research on SDI puts a large region of near-earth space out of use for satellite orbits for 10,000 years, that may be the most important result of SDI research.
Physicist (University)				I feel that the APS should encourage/sponsor study of the impact of the huge projected expenditures on basic research. Also, I should very much like to see addressed problems associated with missiles in space.
				[...] I believe that the study group [...] must consider whether it is technically feasible to build a system, not which has a good chance of working, but which can meet what must be the requirements on it.
Physicist (University)	political?	It will be ironic indeed if we fail to take responsibility for judging whether a request to apply our knowledge will lead to a less stable, less certain world.		
Ph. D.				I would hope [...] that the final report would go beyond questions of physical soundness and technical feasibility by highlighting such remaining issues as systems response time, systems manageability and overall systems reliability.
Physicist (School)	political?	We must speak out and stop accepting weapon systems and more weapons systems as a way of life. We must oppose the SDI.		
	technico-neutral	[The APS] has no particular expertise in the field of politics, and should steer clear of political questions. [...] I would recommend that APS should not, as an organization, attempt to answer the following questions (although APS members should be encouraged to take individual stands on these questions as citizens).		[...] I would recommend that APS should, as an organization, attempt to aid in answering the following questions: 1. Is it scientifically possible, at present, to build a defensive system which could destroy all or most incoming nuclear warheads from a Soviet first strike? 2. What is the relationship between the cost of a prospective SDI system and the percentage of incoming warheads which it would destroy? 3. If we have an SDI system, would it be cheaper for the Soviets to destroy or circumvent it, or would

				it be cheaper for them to build their own SDI system?
Resources for the Future	political?	[...] if you feel it necessary, but after and separate from the science-based conclusions, any comments or „conclusions“ based on political science, diplomacy, philosophy, international history, etc.	pro	I suggest your report at least cover the following subjects: 1. what you are studying and what you are not [...]. 2. the assumptions made for the study [...].
University	political	[...] I applaud the initial ste[ps] APS is taking, and, in particular, believe that the current APS study will provide a useful foundation for a broader view of the whole SDI question. The broader question is, of course, the pressure for increasingly sophisticated and, to some, extent, untestable systems as an approach to providing security and stability in this nuclear age.		
University	technico-neutral?	[...] Our real problem is to convince the public that our technical experience does qualify us to render a judgment which deserves special attention – and even credence.		
	technico-neutral	The APS study is a superb idea and is to be done by extremely competent people who, I assume, will stick to physics and not let personal feelings about SDI interfere.		
University				What would happen if all physicists refused to do military research and decided to concentrate their creative talents on inherently positive pure and applied problems? [...] The world would be a better place with a brighter future.
				[...] I think that the scope of the study is too narrow. It should include the question of whether it will be possible to design a computer system and [...] the software that will make SDI work. The study should also address the matter of antisatellite weapons.