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One Dollar

ABM:
Yes or No?

Donald Brennan, William O. Douglas,
Leon Johnson, George S. McGovern,
Jerome B. Wiesner

With an Introduction
by Hubert H. Humphrey

An Early-Warning Radar

The sole object of the Center for the Study of Democratic Institutions is to shed light upon what ought to be done – and, it might be added, before it is too late.

The subject of this Center Occasional Paper – the anti-ballistic missile – is an example. Probably no decision this nation makes in the next few years will be more vital to the survival of mankind. Yet, few issues have had less public discussion.

A twofold objective, to shed more light and shed it in the open, led the Center to hold the symposium on the ABM.

In doing so, the Center is performing as an early-warning radar in the realm of ideas which shape the lives of everyone living in a democratic society. The Center is not trying to advocate a particular policy – just issue a warning in time and illuminate what can be done before it is too late.

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February, 1969

This publication is intended as a guide and reference tool for those who wish to follow and perhaps take part in what may be one of the most fateful controversies of the nuclear age — the question of whether the United States should construct and deploy an anti-ballistic-missile defense system. The ABM question has been debated in rather restricted circles to date: within the scientific community, in a few congressional committees, and in some journals of opinion. In an effort to widen the circles of discussion, the Center organized a conference in New York in which spokesmen for various points of view participated.

This Occasional Paper is a report on that conference, together with an analysis of the State of the Question by former Vice-President Hubert H. Humphrey. Following this are four statements, pro and con, presented at the conference, and then the edited version of the discussion among these four experts, along with other participants. Following the discussion is a statement by Justice William O. Douglas, who participated in the conference, on the need for a rule of law in the world community.

Preface

Donald McDonald

Since the end of World War II, the nuclear arms relationship between the United States and Soviet Russia has been marked by calculation and miscalculation, many alarms, occasional accommodations, slow-downs, speed-ups, relative stabilization, frequent unease, and constant uncertainty, with the whole periodically subjected, especially during Presidential election campaigns, to misleading rhetoric about bomber gaps, missile gaps, and security gaps.

For more than a decade the two great powers, and perforce the rest of the world, have predicated their strategy upon a power balance based on what is popularly called "deterrence," and is more precisely identified by scientists and military planners as "mutual assured destruction." That is, both the United States and Russia possess "second-strike" capability: if either is attacked, it can retaliate with sufficient force to inflict "unacceptable damage" on the other.

Until very recently this second-strike capability has been presumed to be an adequate safeguard against either power's initiating or provoking a nuclear attack. Both have acted on the premise that their offensive strength also provided a basis for defense strategy: rational men would not attack in the face of certain knowledge that a nuclear exchange would be suicidal.

However, the era of deterrence has been marked by curious anomalies, usually arising from a nervous misreading of the other side's activities and intentions. Both great powers have amassed enough thermonuclear warheads to devastate most of the habitable world several times over, and in the process the United States has built up a four-to-one numerical superiority over Russia in the number of deliverable thermonuclear missiles. This ratio probably will increase dramatically when the United States' MIRV (multiple independently targetable reëntry vehicles) and Poseidon (multiple warheads fitted to Polaris submarine-launched missiles) are fully deployed and operational. MIRV and Poseidon make it possible for one missile to carry from three to ten thermonuclear warheads which can be detached in trajectory and aimed at as many separate targets.

Still, the offensive balance continues to hold. Although the United States has a numerical superiority over Russia, this is not the same as nuclear superiority. Nuclear superiority is the power of one nation to inflict a first strike on another of such force that the other is not able to retaliate and in-

flict unacceptable damage on the attacker. Neither the United States nor Russia possesses such power. And William Foster, the Johnson Administration's director of the Arms Control and Disarmament Agency, said last fall that the "most authoritative experts have assured us" that neither side "can hope to attain [nuclear superiority] in the foreseeable future."

Although Russia and the United States have continued to pin their primary strategy on the deterrent power of their massive, second-strike nuclear capability, this has not precluded sporadic efforts on both sides to explore the possibilities of an active missile defense system. The immediate objective, to reduce casualties, is enormously attractive in its own right. The larger consideration is strategic: an ABM system that could nullify a substantial portion of the enemy's striking power could serve to tilt the balance of offensive power in reverse.

The record of such explorations has not been brilliant. In the nineteen-fifties the United States spent thirty billion dollars on bomber defenses which later were found to have been full of holes. In the nineteen-sixties the United States spent another twenty billion dollars on anti-ballistic-missile research and development, but in every instance abandoned emerging defensive systems when it became obvious that, years before they could be deployed, the hardware and controls would have been rendered obsolescent by Russian offensive missile advances.

Despite these failures pro-ABM pressure has continued to mount in the face of contrary official policy. Scientific advisers for three successive Presidents have opposed anti-missile expenditures, as did former Defense Secretary Robert McNamara, who served both Presidents Kennedy and Johnson. Then, a little more than a year ago, Secretary McNamara yielded. The background of this historic modification of ABM policy has been summarized by Jeremy Stone in an *Adelphi* report published by the British Institute for Strategic Studies:

"On 18 September 1967, Mr. Robert S. McNamara, then US Secretary of Defense, announced plans to deploy a limited ballistic missile defence system (called *Sentinel*) against the possibility of an attack by Chinese ballistic missiles. He acted under considerable political pressure, and called the case for the weapon system 'marginal'. This political pressure was generated very largely by the belief — now thought to be mistaken — that the Soviet Union was deploying ballistic missile defences around far more than Moscow.

"The Soviet Government had expressed willingness in principle to discuss limits on the arms race, but had delayed in setting a date for talks to begin. Many drew the conclusion that the Russians were 'stealing a march' on the United States. Because this pressure combined with the problem of missile defence against China, and because China became the rationale for the decision taken, it is a decision almost impossible to reverse on the grounds of faulty American estimates of Soviet intentions. Indeed, the new US Secretary of Defense, Mr. Clark Clifford, has advised the Senate Armed Services Committee that he is for maintaining a 'clear-cut nuclear supremacy' over the Soviet Union; this approach, distinctly more favourable to missile defence procurement than that of Mr. McNamara, suggests an increase in the likelihood that the United States will press on to build a larger system. . . .

"For eight years preceding the September 1967 decision to deploy a 'thin' ballistic missile defence, United States Administrations considered and rejected suggestions that on-going development programs for missile defence be followed by procurement of one system or another. At first it was a primitive Nike-Zeus missile — considered successful if it could make an 'intercept' of a single incoming warhead. Such a system could have been built by 1963-64 but would, according to estimates made by the Defense Department in 1962, have been obsolete by the time it became operational. A more advanced system, Nike-X, could have been ordered in 1963 and built by 1968, but — relative to projected Soviet improvements — would have been obsolete by 1966.

"These systems depended upon tracking incoming objects despite clouds of 'chaff,' then distinguishing between decoys and weapons, and then launching anti-missiles at located warheads. Since observations of atmospheric drag on incoming objects were critical to distinguishing them, the defence was required to wait until the attacking warhead had entered well into the atmosphere and to intercept perhaps 5,000 to 100,000 feet off the ground; hence it had to rely upon interceptors that could climb thousands of feet in a few seconds. For this reason also, it had to anticipate low-level detonation of adversary warheads, and hence it had to complement the system with fallout shelters. Finally, the defence was local in character, covering ranges of only 15 to 25 miles, and all but the largest 25 or 50 urban areas would have been undefended.

"Although the systems under development were quite obviously improving throughout the 1959-65 period, they seemed, paradoxically, ever less likely to be built. The problem of civil defence, the partial coverage provided by the defence, the rising cost of building an ever more complicated system, a growing willingness to rely upon the balance of terror, the prospect of suitable Soviet penetration devices, a wide-spread desire not to stir up the arms race, and Mr. McNamara's emphasis on cost-effectiveness — all combined to limit the prospects for missile defence procurement.

"In 1964, Communist China exploded her first bomb, and American strategists saw a threat that might be neutralized with greater confidence than could that of the Soviet Union. Not long thereafter, the range of the American interceptor missiles was greatly expanded. At the same time, new techniques were developed to permit the destruction of incoming missiles with X-rays while they were still outside the atmosphere. (Earlier systems had relied on blast effects in the atmosphere, and hence such systems were ineffective at airless altitudes.) The increased range of the interceptor, in conjunction with the new X-ray method of 'kill', enormously improved paper-and-pencil calculations of effectiveness. Incoming missiles could be attacked several hundred miles up. Each interceptor battery could cover a ground radius of about 400 miles. When these results were considered with respect to the new (and weaker) prospective Chinese threat, some began to talk of the possibility of preventing any Chinese missiles from penetrating until the 1980s — even of discouraging China from building long-range missiles at all.

"In this supersaturated situation, in 1966, some evidence was uncovered that the Soviet Union had begun to build a ballistic missile defence. Earlier sporadic Soviet efforts to build a single battery around Leningrad in 1962 had created only a stir. Now it seemed certain that a defensive system had been installed around Moscow. Elsewhere, unquestionably, something was being built rapidly. This more comprehensive installation (called the 'Tallinn' system, after the Estonian city that housed part of it) was thought by some to be a defence against missiles. General Earle G. Wheeler testified that it would violate 'military logic' if it were not. But despite an earlier news conference in which Mr. McNamara announced 'considerable evidence' that the Soviet Union was deploying an anti-missile system, he testified in 1967 that existing evidence could be explained by the hypothesis of an extensive new air defence system. Presumably such a system would have been started in anticipation of a high-flying B-70, or it might have reflected compulsive vested interests in air defence. By 1968, a 'majority' of Department of Defense analysts subscribed to Mr. McNamara's 'air defence' view, and the situation was seen as follows in [testimony supporting] the fiscal 1969 defence budget:

" 'Now, I can tell you that the majority of our intelligence community no longer believes that this so-called Tallinn system (which is being deployed across the northwestern approaches to the Soviet Union and in several other places) has any significant ABM capability. This system is apparently designed for use within the atmosphere, most likely against an aerodynamic rather than a ballistic missile threat.'

"Although construction of the Galosh ABM system around Moscow is proceeding at a moderate pace, no effort has been made during the last year

to expand that system or extend it to other cities. It is the consensus of the intelligence community that this system could provide a limited defence of the Moscow area but that it could be seriously degraded by sophisticated penetration aids.

"Notwithstanding this new appraisal of Soviet plans, the Defense Department has not changed its own plans, asserting: 'Nevertheless, knowing what we do about past Soviet predilections for defensive systems, we must, for the time being, plan our forces on the assumption that they will have deployed some sort of an ABM system around their major cities by the early 1970's.' The phrase 'for the time being' presumably refers to the possibility of American-Soviet discussions and may suggest American willingness to compromise in the presence of talks."

This shift in Defense Department policy, followed by congressional authorization of the five-billion-dollar "thin" screen, has opened the way for ABM proponents to raise the ante and argue openly for the "thick" or "heavy" system, of which Sentinel would be simply the building-block. The initial cost of ABM as now visualized is generally conceded to be in the range of forty to fifty billion dollars and its scope has been escalated to provide protection for twenty-five to fifty American cities and for our missile-launching installations.

The debate between pro and anti ABM partisans has waxed throughout the months since Mr. McNamara's Sentinel announcement, a curious and prophetic speech in which he warned of the pressures that would follow:

"There is a kind of mad momentum intrinsic to the development of all new nuclear weaponry. If a weapon system works — and works well — there is strong pressure from many directions to produce and deploy the weapon out of all proportion to the prudent level required.

"The danger in deploying this relatively light and reliable Chinese-oriented ABM system is going to be that pressures will develop to expand it into a heavy Soviet-oriented ABM system.

"We must resist that temptation firmly — not because we can for a moment afford to relax our vigilance against a possible Soviet first strike — but precisely because our greatest deterrent against such a strike is not a massive, costly, but highly penetrable ABM shield, but rather a fully credible, offensive-assured destruction capability.

"The so-called heavy ABM shield — at the present state of technology — would in effect be no adequate shield at all against a Soviet attack, but rather a strong inducement for the Soviets to vastly increase their own offensive forces. That, as I have pointed out, would make it necessary for us to respond in turn — and so the arms race would rush hopelessly on to no sensible purpose on either side."

The ABM debate has been only incidentally over Sentinel as such. That decision has been taken, Congress has appropriated the construction funds, and presumably Sentinel will be deployed unless President Nixon presses for a reversal of prevailing Defense Department policy. But the debate over the basics of anti-ballistic-missile defense is by no means over. The current round turns on whether a heavy ABM system can be justified; the Sentinel decision did not settle that argument, it only inflamed it. Mr. McNamara's pronouncements before leaving office, and Secretary Clifford's since assuming it, have done nothing to resolve the technical, military, economic, and political differences which lie at the heart of the ABM controversy.

Yet, despite the high status of the adversaries and the fateful character of the issue, the ABM question has been debated in rather restricted circles to date: in the scientific community; before a few congressional committees and, on one occasion, before a secret session of the Senate as a whole; and in some journals of opinion. In fragmented fashion the running controversy occasionally breaks through in the mass media, and this has produced a prevailing editorial uneasiness among the more serious newspapers, periodicals, and television commentators. And the ABM issue turns up as a priority item on the agenda of all of those concerned with the current state of international relations, for it is well on the way to becoming the most immediate and dangerous symptom of the Cold War.

To examine the current state of the ABM issue, and appraise its possible consequences, the Center for the Study of Democratic Institutions brought together experts representing opposing scientific, military, and political views. Gathered in New York in late November of 1968, with the confusions and alarms of the Presidential election behind them, protagonists and antagonists of ABM met in two lengthy sessions, the second of which broadened the discussion to include associates of the Center and others qualified to introduce subsidiary but essential political, economic, and social questions that flow from the central strategic issue. This publication is a distillation of those discussions, and of the position papers prepared for them.

It is introduced by Hubert H. Humphrey, former Vice-President of the United States. A leader in arms control debates during his long service in the Senate, Mr. Humphrey during the past four years has been directly involved, as a member of the National Security Council, in the decisions that led to deployment of the Sentinel system and to the apparent reversal of long-standing policy against anti-missile defense. Mr. Humphrey here renews his plea for a full public airing of the larger strategic issues that lie behind ABM.

The State of the Question, An Introduction

Hubert H. Humphrey

America's determination to find ways of stabilizing the nuclear arms race will be severely tested in the coming days. President Nixon will be faced with a series of decisions that will irrevocably affect the security of this nation and the peace of the world. The U.S. Congress will review these decisions and a spirited exchange of opinion on Capitol Hill is guaranteed. We are, in short, on the verge of a great debate on nuclear arms control, a debate whose outcome could well determine the survival of this country, not to mention the life and death of millions of other persons around the globe.

Yet the American people are shamefully ill-informed on these matters. Decisions of far-reaching significance can be accomplished with only the slightest involvement of the informed and politically aware public. In a representative democracy this is unhealthy under any circumstances. When the survival of the planet may be involved, the situation becomes intolerable. That is why this paper is so important. It seeks to bring to the American people the facts on the most critical issue of nuclear arms control; should the United States build an anti-ballistic-missile defense system?

As President Nixon takes office he will find that the basic decisions on the strategic issues posed by ABM, far from being settled by the congressional authorization for a "thin" screen that lies on his desk, are yet to be made. He will receive, as we did in the Johnson Administration, directly conflicting testimony from his scientific advisers as to the capability of the proposed anti-missile defenses; and he will receive conflicting intelligence estimates as to the Russians' capability to penetrate our defenses, or shield themselves against our nuclear missiles. He stands now at the point where he must modify or reverse the recommendation of his military advisers; rest with the admittedly inadequate "thin" ABM system for which the Army is already selecting sites; or make a commitment to a "heavy" system that will, by common agreement, usher in another fateful stage in the nuclear arms race with the Soviet Union.

Throughout the Presidential campaign, I emphasized that the most important question facing the new President would be that of negotiating an agreement with the Soviet Union to limit the strategic arms competition. Despite the brutal invasion of Czechoslovakia by the Soviet Union and its dire consequences for East-West relations, both the United States and the Soviet Union continue to have a mutual interest in reaching such an agreement. The discussion over the ABM should be viewed in relation to this broader issue, but the ABM issue is, however, the most immediate and potentially dangerous issue on the arms control agenda. Although

the ABM issue was not discussed in detail in the Presidential campaign, I have always been skeptical in my own mind about the security value of deploying an ABM system. I share the reservations stated by Secretary McNamara when he announced the ABM deployment in 1967. At the same time, I understood the reasons why the President felt that preparations for a limited deployment might quicken the interest of the Soviet Union in meaningful negotiations on the strategic arms race, provided we place top priority on the urgent necessity of reaching an agreement on the ABM issue.

The ABM issue is not an easy one for the public to follow. It may be, as suggested by Dr. David R. Inglis, of Argonne National Laboratory, "the world's nuclear problems are too subtle for the average unconcerned citizen; the part most visible to him is the economic manna descending from the defense-industry heaven." The trouble with that complacent view is that there is no longer any such thing as an unconcerned citizen, whether he knows it or not.

There are a good many reasons why the ABM controversy, which has raged within the government for almost a decade now, has been hard to follow. Official secrecy has had something to do with it, but not much. Although sometimes delayed and distorted by security regulations, the essential facts on such large strategic questions always come to light and find their way into general circulation. The description of the development of American ABM policy quoted from a paper published by the British Institute of Strategic Studies in the preface to this paper is an example of the manner in which the information and estimates of the "intelligence community" are regularly publicized. Although a few details may be incorrect, or missing, the principal elements upon which the official policy-makers based their decisions are neatly laid out for all to see.

The record of the debate on *ABM: Yes or No?* which follows provides a valuable demonstration of how this kind of decision-making actually goes forward. As the reader will see, the participating scientists provide a hard core of factual analysis, usually reduced to numerical calculations suitable for a computer, and upon this base the strategists erect their structures of speculation and conjecture. It is, on the surface at least, comforting to come back to this solid collection of presumably measurable facts after a chilling exercise in what, in the nuclear era, has come to be called "thinking the unthinkable."

The very vocabulary of nuclear gamesmanship is uncomfortable for all but the most hardened practitioners. Neil Jacoby has noted that what economists ordinarily call "cost-benefit" analysis is changed to "cost-effectiveness" analysis in Pentagon parlance, "probably because it puts language under serious strain to refer to the death of a hundred million Russians or the destruction of a hundred billion dollars of Soviet capital as a benefit."

But one begins to suspect that this resort to the "facts" is not, as it appears, a return to reality but a retreat from it. Changing the vocabulary does not disguise the fact that the counters in the game are human lives, and the stake the fate of nations. Jerome Wiesner, who played it for years, calls it "the numbers game" and insists that it runs out of substance at the point at which it requires human judgment — as it always does.

Trying to explain to President Kennedy why scientists, who are supposed to be the most rational of people, could differ so on a technical issue, Wiesner pointed out that it is nature that is rational, not the scientists who try to explain natural processes: "Different people make different assumptions about all these elements. That is what is involved in the argument about anti-ballistic-missile systems. One man's assumptions give one set of conclusions; another man's assumptions give a different set. Some of the assumptions are essentially undefinable. We are talking about things we do not and cannot know anything about no matter how we try. And so you can take whichever set of assumptions you choose."

Yet much of our most critical defense policy is being made on the basis of these numbers. And even so experienced a Washington hand as Dr. Jacoby, turning a skeptical economist's eye on the

decision to put five billion dollars in the thin Sentinel ABM system, has looked at the cost-analysis considerations involved and accepted the result because "presumably the Pentagon has plugged figures into the equations, run the calculations, and reached an affirmative conclusion."

We are living in an environment significantly affected by what President Eisenhower called the military-industrial complex and its principal offspring, the mammoth research and development budgets which sustain the defense establishment in the nuclear and missile age. R & D is a catalyst; by its nature it leads to far greater investment in production of the goods and systems it makes possible. Thus every dollar spent on R & D has produced an expenditure of at least five dollars in military procurement alone. This diversion of funds into the military-industrial complex is widely recognized. What often escapes notice is the massive diversion of brainpower away from the civilian economy into the defense establishment. There inevitably arises among many of these talented individuals a disposition to justify defense expenditures, rather than to think in terms of national limitations on the production and dissemination of arms.

The principal points at issue in the ABM controversy are ably set forth in the following discussion. Here, as in the inner circles in Washington, they are advanced by men of great intellectual capacity and high moral purpose. In summary they are:

Challenge: The "heavy" ABM system will be the most complex technological system ever built by man, and there is no way to test it except under actual enemy attack. The odds are for at least a partial failure, and in this contest even a low percentage of missile penetration can be fatal.

Response: The military-industrial complex can meet the challenge and produce a system with a tolerable margin for error.

Challenge: Today's offensive missiles, with their improved penetration aids, probably could overcome the ABM system as now visualized, and the offensive improvement that its deployment is bound to stimulate certainly will render the system obsolete before it can be made operational.

Response: Any projected margin of failure for the defense system is not necessarily any greater than that for the offense.

Challenge: The cost is disproportionate to the protection ABM can afford.

Response: Potential deaths in an undefended United States are a hundred and twenty million; ABM could reduce that casualty list to forty million; the saving of eighty million lives is not only a compelling humane consideration but involves our survival as a nation.

Challenge: ABM will intensify rather than restrain the arms race, worsening instead of improving U.S.-Soviet relationships.

Response: This does not necessarily follow. If the United States deploys an effective ABM system the Russians might also shift their emphasis to defense, thus permitting a mutual deëscalation of the offensive missile race.

There is not, as Dr. Wiesner points out, any final proof here, only untested assumptions — and a man may come down in good conscience on either side, depending upon which set of assumptions he chooses. In closely following the development of missile policy over the years, I have myself found the most persuasive scientific argument on the side of restraint. I did not change that view when Secretary McNamara reluctantly compromised in favor of the "thin" ABM; it seemed to me that even in announcing it he made a better case against the new system than he did for it.

There is a grave omission in all this. The missile game is played almost entirely within the limits of scientific and military concepts; political considerations are largely dismissed as imponderables, relegated in the computer computations to a place along with such diversionary factors as the possibility of human error. The result is to predetermine the character of the game's result; the policy it produces is bound to be shaped within the limits of the military factors upon which it is predicated. We may have more missiles, or fewer, or missiles of a different

type, but this is no more than addition and subtraction of the hardware of deterrence — and experience on both sides has indicated that the exercise leads inexorably to multiplication.

The tendency is to dismiss the political alternative to the balance of terror as entirely too risky — or at best to give it lip service. Well, politics is a risky business. But I would ask in all seriousness if it is any more difficult for the skilled and dedicated men who practice diplomacy to compute the odds on possible failure of a U.S.-Soviet disarmament treaty than it is for the scientists and strategists to determine the malfunctioning potential of ABM. I do not believe it is, and if the question is to be decided by the simple assessment of risk, it ought to be pointed out that a diplomatic debacle would not necessarily be terminal, while an ABM failure certainly would be.

The truth is that we have been demanding more certain guarantees of success of those who have urged the positive course of negotiated disarmament than we have of those who insist that prudence requires us to rely on the negative protection of nuclear deterrence. The only proof of effectiveness that can be offered in defense of the missile standoff is that we have survived twenty years of international tensions without precipitating World War III.

ABM is described by its proponents as defensive, but if it does achieve an effective missile screen it could become offensive, since it would release strategic policy-makers from the restraints imposed by enemy second-strike capacity. The Russians will certainly recognize such an offensive potential, as we did when a rudimentary missile defense system was deployed around Moscow several years ago.

It is contended that we can build up our defensive screen and our deterrent forces at the same time we actively pursue the goal of arms control and ultimate disarmament; indeed, it is argued that this is the only practical way we can proceed, since our adversaries will not respond to anything less than the clear threat of being outdistanced in the arms race. The history of the last decade seems to me to provide a monument to the fallacy of this theory.

So it is in the larger arena where we coexist uneasily with the Soviet Union, while sharing with the Russians the overt hostility of the People's Republic of China. I would be the first to agree with the dictum that the United States must negotiate with the communist world from a position of strength. But there is reason to doubt that we can any longer equate strength with military power alone. Secretary Clark Clifford, in his final report to the Congress, echoes the thoughts of his predecessor in the Defense Department by stressing that true national security is a compound of more than nuclear warheads and missiles. Another round in the nuclear arms race could only increase our insecurity compared to achieving verifiable agreement with the Soviet Union to limit strategic offensive and defensive forces.

For a while, when the leaders of all the nations accepted the balance of terror as an inescapable fact of strategic life, we began to see our differences more clearly, and to consider means by which they might be resolved without the use of the military force now denied the great powers, at least on a global scale. We did not resolve our ideological differences, nor reduce all our conflicts of interest, but, as Justice Douglas notes in the concluding essay in this paper, we did achieve a substantial number of agreements and arrangements under which a great deal of useful international business has been conducted. We can draw at least a minimal lesson from that experience: we are not strangers any longer, and it is not ordained that we must again become enemies.

Robert McNamara, who has been as close to these matters as any man alive, ended his long tour in the Defense Department convinced that the most dangerous thing in the world is a state of mind — the belief among powerful men on both sides, in the face of all the horrendous evidence to the contrary, that somehow the scientists will yet find a way to employ nuclear weapons so that military men may again win a war. This is the real issue in the ABM controversy; when nations begin to accept the thesis that they may be able to devise adequate protection against nuclear attack they also raise the possibility

that they may yet be able to use decisively offensive missile force; and on the basis of a mixture of unfounded hopes and challenged assumptions they may turn away from serious negotiation and the effort to find a way to base international relations on liberating reason rather than paralyzing fear.

I say the time has come when we should take some risks in the name of peace, rather than continue the great nuclear gamble in the name of security. In this light ABM might yet provide a great service in advancing the strategic arms negotiations, if, having taken the system to this stage of development, we set it aside as a symbol of our determination to halt the arms race where it is, and turn it back if we can. Let us couple this with passage of the nuclear non-proliferation treaty now pending in the Senate, and go back to the negotiating table with the Russians. The application of as much energy, imagination, and determination in an honest effort to find a formula for arms control as we have invested in the effort to ring our cities with ABM will, I am confident, bring far greater rewards with less risk.

Many wise and experienced men in Washington who agree that this is what we should do insist that it cannot be done — that it is a political impossibility to reverse the policies that have produced, and are now shaped by, the military-industrial complex. It will be difficult, yes, but it is not impossible. For we cannot forget that our only chance of obtaining the huge volume of funds and talent required to rebuild American society at home lies in placing some limitation on the arms spiral. If we fail to do this, urgent domestic needs will go unmet. What is needed now is a great expansion of the dialogue set forth in this paper: let us get the issues out in the open, and get them clear. The fundamentals of the missile controversy are not beyond the comprehension of the American people, and certainly no decision of the magnitude of ABM should be taken on their behalf without greater evidence of their informed consent than can be said to exist presently.

Waverly, Minnesota
January, 1969

"The strategy of assured destruction, or deterrence through a balance of terror, means that we must have the capability to destroy the Soviet Union as a viable nation even after suffering a surprise first strike. This is a radically new military concept."

". . . an ABM deployment by the United States would actually decrease our security and our capacity to conduct an intelligent and rational foreign policy. It would do this not only because it would be easily penetrated by the Soviet Union at less cost, if they chose to do so, but also because it would lead to a further escalation of the arms race and a worsening of Soviet-American relations."

The Argument

Against: Jerome B. Wiesner

Jerome B. Wiesner, a former science adviser to President Kennedy, is provost of Massachusetts Institute of Technology.

Dr. Karl Compton's sister, when living in India, watched a handyman driving a nail in a wall of her house, tearing up a lot of plaster in the process. In desperation, she finally grabbed the hammer and nail and said: "My God, man, let me do that. Why don't you use some common sense?" He drew himself up in all his dignity and said: "Madam, common sense is a gift of God. I've only got a technical education."

What I have found hardest to learn in twenty years of dealing with military technology and international security problems is how to add a measure of common sense to them. Many other people have this problem, too. The whole issue of ABM, I believe, ends up as a conflict of judgment rather than one of analysis. Making the analysis is very important because it provides the raw material for judgment; it gives some feeling for what is possible and what isn't. But very often it turns out that analyzing a complex situation offends plain common sense or defies understanding. In studying a complex problem like ABM, certain assumptions have to be made, and if the assumptions are bad, the analysis will simply conceal them.

This happens frequently, and is happening now in the debates about the anti-ballistic missile. We do not have adequate knowledge about many aspects of an anti-ballistic-missile duel because we lack vital data about the attacking missiles and about ABM performance. So we just pick some numbers that seem rational and we use them to make whatever point serves our purpose.

I once had an argument with James Webb and his staff about the best way to go to the moon. My calculations showed that the lunar orbit approach was much less certain than the earth orbit estimates on which his reliability values for each operation were based — a prime example was the reliability of starting an engine. When he became convinced his conclusion was suspect, Mr. Webb set his analysts to work and they came back with some new figures that proved their point. Now, it was hard for me to judge whether the restart probability of an engine that had never been built was going to be .9997 or .99998. And it was numbers of this kind, by the computerful, that made the difference.

President Kennedy once said to me: "I don't understand. Scientists are supposed to be rational people. How can there be such differences on a technical issue?" I explained that it was nature that is rational, not the scientists, and that after scientists understand something they can explain nature rationally; when they attempt to evaluate something that has not been built, they have to make assumptions about what can be done, how fast it can be done, how well it is going to work, and what its effectiveness will be. Different people make different assumptions about all these elements. That is what is involved in the argument about anti-ballistic-missile systems. One man's assumptions give one set of conclusions; another man's assumptions give a different set. Some of the assumptions are essentially undefinable — we are talking about things we do not and cannot know anything about, no

matter how we try. And so you can take whichever set of assumptions you choose.

Of course, it gets even worse than that. When we design a system like the Sentinel and then analyze it, we assume almost idealized conditions. We assume it is going to work as specified, or we quite arbitrarily use some reliability estimate like .95. But we can't know whether that is even close to correct because we have never built or operated anything like the Sentinel before. Even though the Sentinel is a very simple system (compared to the one that some people would really like to build once they get the Sentinel under the tent), it is probably the most complicated electronic system anyone has ever tried to put together. Here it is, the most elaborate, sophisticated, dynamic combination of rocketry, radars, computers, electronics, and other technology ever proposed, and we are expecting that it will work and work well and not just well but perfectly the first time it is tried in a large-scale test. All kinds of mock tests can be invented for it, but the first genuine one will be when it is used in earnest. This contrasts with many weapons of the kind that were used in World War II, or now in Vietnam, where the soldiers must keep using them in spite of their defects until the military man understands their flaws and weaknesses and works his way around them, or, if they are too defective, he complains to the manufacturer and demands that they be straightened out. I would like to see the complaint the military writes to the manufacturer of the Sentinel system after it discovers that the computer program for discriminating between "garbage" and incoming nuclear warheads was written wrong, like the computer in the last election that reported that a hundred and eighty per cent of the population of a particular town had voted.

In my opinion any ABM is un-testable. I am offering you this as a judgment, not a technical fact. But I think it is something that ought to be kept in mind by anyone who is trying to understand the more detailed technical arguments.

To judge an ABM defense system we must know its purpose. Is it supposed to provide an area defense, or defense of missile sites, or defense of a fleet, or defense of a few cities? It has to have some specific purpose, but one of the interesting things about the argument for the ABM is that its purpose seems very hard to grasp. We were told at one point that the Sentinel system was intended to protect us against any irrational behavior on the part of the Chinese, though many people would contend that our existing deterrent system will do this adequately now. A careful analysis of the Sentinel system, however, does not show that Sentinel would provide protection against Chinese nuclear weapons for very long unless we make some unbelievably naive assumptions about the Chinese — that they do not have access to our journals and newspapers, for example, or that they are simply not thinking people.

I don't think we should spend much time talking about the Sentinel. We ought to regard the Sentinel as a bad joke perpetrated on us by Mr. McNamara and Mr. Johnson in an election year. It seems to me that their very rationalization — that it was to defend us against the Chinese but we would stop building it if the Russians agreed not to build one — demonstrates that well enough.

We should look at the more general question of large anti-ballistic-missile systems and concentrate on what the military and the congressional enthusiasts for ABM would like to build, if they could get us to agree. What they have in mind is a much more sophisticated and elaborate anti-ballistic-missile system that would have the capability of intercepting missiles fired at the United States. The question is: does it make all that much difference to our security if an ABM system can shoot down some fraction of the ballistic missiles aimed at our cities? What, in fact, is the general, over-all effect on our security of creating an ABM system? How does it change our deterrent posture? How much protection, if any, will it give the country at large, or the military installations? What is its effect on our efforts to achieve a more rational world? What does it do to a variety of other military objectives we might have?

Before we approach such questions, there is one important generalization I would like to stress, one

that should always be kept in mind while examining strategic-weapons systems but that people almost always forget to take into account. It is that these developments take a long time from conception to effective operational deployment. This gives a kind of inherent stability to the character of the military-technical race. To appreciate this fact, we need only to think back to some of the frights that did not materialize — the missile gap and the bomber gap, for example. It takes time and effort to change the strategic balance drastically. The development from the research stage, which itself takes time, to the prototype stage takes even more time, as do the testing and de-bugging of anything so complicated. Engineering it into a producible device takes more time, its production takes time, its deployment into the field takes time. Finally it is operational and then, if it is a defensive weapon, it is generally also obsolete. This whole cycle takes about ten years.

Some weapons systems are obsolete in their conception, and I think this is probably true for the anti-ballistic-missile system before us. I have, in fact, come to the conclusion that any system that depends on projectiles—rather than, say, nuclear rays or electromagnetic beams or laser beams—is futile.

In 1961, when President Kennedy first began to survey his military problems, his attention was drawn forcefully to an anti-missile system, the Nike-Zeus. He began to get a flood of mail, from friends, from Congress, from people in industry. The press pointedly questioned him about his plans to deploy the Nike-Zeus system. He began to see full-pages for it in popular magazines like *Life* and *Saturday Evening Post*, proclaiming how Nike-Zeus would defend America, and listing the industrial towns which would profit from the contracts for it —advertisements, by the way, that were generally paid for with government money as contract expenses. (The law no longer permits such advertising to be charged to contracts.) This pressure built up to the point where President Kennedy came to feel that the only thing anybody in the country was concerned about was the Nike-Zeus. He began to collect Nike-Zeus material. In one corner of a room he had a pile of literature and letters and other materials on the subject. He set out to make himself an expert on the Nike-Zeus and spent hundreds of hours gathering views from the scientific community about it. In the end he decided not to deploy Nike-Zeus. Then something interesting happened. As soon as the decision was made against Nike-Zeus, everybody admitted that it was no good. People began to point out weaknesses in the system — that, for example, it was a system with very little discrimination between what it ought to intercept and the decoys fired to confuse it. Even Mr. McNamara said that to have deployed the Nike-Zeus would have been a very serious mistake.

An anti-ballistic-missile system attempts to intercept and destroy ballistic missiles coming in very fast, very high, from long distances. It requires that the defenders fire their own intercepting missiles from the ground after they have detected the incoming missiles with a long-range radar. Detection normally occurs when the attacking missiles are several hundred miles away if their trajectories are normal. They can be detected farther away if forward radars are employed. After detection one makes a rough projection or prediction of the trajectory of the incoming missile and launches an anti-missile, usually a rocket carrying a nuclear warhead, in the direction of the incoming device. The missile-tracking radar on the ground must follow the incoming warhead and it tells the anti-missile rocket where to go. When the defensive rocket gets close enough to the incoming missile its nuclear warhead is exploded and, in principle, destroys the attacking object. This has been demonstrated both by analysis and in field tests to be possible. No one questions that if you set up this kind of system it will work in an ideal situation.

However, there were several things wrong about the Nike-Zeus that would have made it relatively ineffective in real situations. First, as originally designed, it was supposed to intercept incoming missiles at very high altitudes, out of the atmosphere. This meant that it was easily confused; an enemy could mix real nuclear missiles with lightweight de-

coys made to look like missiles, and send them in against Nike-Zeus, so that it would be totally saturated. To correct this we allowed the incoming devices to come down into the atmosphere; the difference in weights allowed the heavy pieces, the real warheads, to go on, while all this other lightweight decoy junk was slowed down and separated out. This tended to work somewhat better, but even so the whole system, as conceived, really wasn't good enough. It could not respond fast enough. Its radars weren't good enough. Its traffic-handling capacity — that is, the number of missiles it could deal with at one time — was not adequate.

Also, Nike-Zeus was subject, as I believe all the later systems are, to something called blackout; that is, if a nuclear explosion were set off to destroy an incoming missile, it also upset the gas in the air, "ionized" it — electrons strip off from the molecules and for a while the gas acts like a metal rather than a gas so that radar waves cannot go through it and you cannot see what is behind it. Nike-Zeus was open to this in two ways. First, if you fired some rockets and they set off their own nuclear weapons, you might generate self-blackout. Second, if the enemy recognized that the defense had this vulnerability, he could design his offensive system to occasionally dump in a rocket with a nuclear warhead, explode it, and generate enough ionization to black out your radars. But Nike-Zeus had another interesting weakness — by the time it had been brought down to a reasonably low altitude so that the atmosphere would filter incoming devices, no one could be sure that when it set off its nuclear explosion it would not damage itself.

Nike-Zeus was a point defense system, and this posed two more problems. First, which points in the United States would be defended? This presented a terrible political problem. Would we defend the twenty-five largest cities? The fifty largest? Second, it was possible for an intelligent enemy to bypass the point defense system and land his nuclear weapons in the countryside, just outside the range of the system, generating a fallout attack on the population. This meant we would have to build fallout shelters on a grand scale.

As I said, once Nike-Zeus was turned off, even its strongest proponents admitted it had fatal weaknesses, and they undertook to try to fix them. The worst weaknesses of the Nike-Zeus have now been eliminated. The new system, Nike-X, of which the Sentinel uses some pieces — but which is certainly not what is being proposed as the full ABM to defend the United States — is improved in almost every aspect. Its radars are electrically scanned; they can look in all directions very rapidly. The radars have higher power so they can see farther. The Sentinel has two intercept rockets, one designed for low altitude, called Sprint, that can get up there fast and maneuver quickly; another called Spartan, for long-range interception. It has a computer system better able to discriminate between trash and nuclear warheads in the incoming package.

We have also changed, at least in principle, the way in which we would destroy incoming nuclear warheads. Still another problem with the Nike-Zeus was that its destruction of the incoming nuclear weapons depended on a phenomenon called neutron heating. When one explodes a nuclear weapon near another nuclear weapon, a flux of neutrons is released; these penetrate into the guts of the second nuclear weapon and heat it enough to melt it. However, this effect does not work over very great distances; so the Nike-Zeus presented us with the problem that a single defensive nuclear explosion could be effective against only a limited number of incoming missiles. Although I do not think that cost factors are the most important part of the argument, this did create an economic case against ABM.

Well, in Sentinel, at very high altitudes, we have gone over to another phenomenon called X-ray kill. We have substituted nuclear weapons that can generate an intense flux of X-rays which are effective at greater distances than the neutrons. The difficulty with all of this is that it produces a kind of electronic Maginot Line. The defender sits and guesses about the attacker's tactics. If he guesses that one thing is going to happen, he invents a technology to deal with it. If he guesses that something else is going to happen, he invents another technology. But there is always the possibility that something quite unex-

pected will happen. I do not think the defender is ever going to know really what to expect; the variety of techniques available to a nation planning an offensive system is great enough to keep an anti-ballistic-missile system of the kind we are talking about totally off balance.

As a matter of fact, just the thought that we might develop an anti-ballistic-missile system, and therefore that the Russians might do the same thing, caused us to develop a whole new set of offensive countermeasures that make our Air Force and Navy confident that we do not have to worry about a Russian anti-missile system. We have some new missiles that, instead of a single warhead, carry several and with high accuracy. We have available, and so do they, the possibility of using the black-out attack. One can develop very different kinds of offensive rockets that come in at low altitudes and do various elaborate maneuvers. We can shield against X-rays. The choices are endless.

So, as I said in the beginning, anyone who makes calculations about what his defense system can do must make and proceed from a series of assumptions that do not seem to be warranted. But, of course, this does not stop people from making them.

In his 1967 "defense posture" speech, for example, former Defense Secretary McNamara cited some figures still widely quoted. He said a nuclear exchange with Russia in 1967 would cause one hundred and twenty million American deaths. He then postulated two anti-missile defense systems for the United States — one, Posture A, would cost ten billion dollars, and the other, Posture B, would cost twenty billion dollars. His calculations indicated that the ten-billion-dollar system would reduce American fatalities to forty million deaths, while the twenty-billion-dollar system would reduce American fatalities to thirty million. These are numbers I find hard to grasp, but they obviously are meant to indicate a very substantial improvement in the fatality ratio if we were to build a defense system. However, more questions were left unanswered than were answered in the calculations. First, Mr. McNamara, I believe, assumed the system would work as planned. But, let me repeat, I have serious reservations about the effectiveness of such an ABM system even if a potential enemy were not devising things to undo its effectiveness. I do not think its performance would be anywhere near the advertised predictions because of its very complexity. Second, Mr. McNamara said he had made his calculations on the basis of the 1967 Soviet offensive missile deployment. But that was not a Soviet deployment the Russians told us about; it was only McNamara's guess, or somebody's guess, about the Soviet deployment. So our defense planners must have had to make certain assumptions not only about our own system's weakness and accuracy but also about how fast the Russian missiles would come in, how well they would be protected, and whether they would bear one warhead or two or more. Maybe Mr. McNamara knew all these things. But I suspect there were a lot of assumptions in his calculations that might not hold up. Even if they had held up in 1967 when they were made, I doubt that they would be of much use today.

Mr. McNamara said that the 1967 Soviet land-based missile force was seven hundred and fifty missiles and he estimated their future growth on a basis of past experience. I doubt if anyone today questions that the Soviet force is at least one-third larger than it was in 1967; it grew much faster than predicted. So, even the simple estimate of the Soviet force was wrong. Furthermore, the United States could not have built the ABM system Mr. McNamara was talking about in the time available between 1967, when the calculation was made, and today. It would have taken five or six or seven years to build it. So Mr. McNamara would have had to have the nerve to guess what the Russian deployment would be in 1975 in order to have made a meaningful estimate for that time period. He obviously had sense enough not to try.

Unfortunately, many people do not read the fine print. They do not realize that you cannot snap your fingers and wish into existence that kind of anti-ballistic-missile system being argued about. They do not realize that if we

build an anti-ballistic-missile system and the Russians regard it as something they do not like, they have plenty of time to respond and to figure out how to get their missiles past it, or that if they build an ABM system, we can respond in the same way.

In essence, then, my judgment is that we are just as likely to wind up a captive in the arms race if we start going the way of ABM defense as if we continue to build more and more offensive missiles.

There are people who say that it is better to spend your money on ABM defenses than on more destructive power. If one could do this — that is, freeze the offensive power on both sides and build only defensive systems — this might make ABM a good thing. If Congress, the military, and the manufacturers were happy to build only defenses and did not press us to add to the offensive forces, maybe ABM would be a good buy.

But I do not believe that this is a tenable situation, and this is the reason for one basic disagreement on the ABM. I think we would reach a point in the growth of the ABM defensive system where people would argue that improved defenses mean that the offenses no longer can guarantee deterrence and that we must therefore increase our offensive capability even more.

This is not a matter that anybody can settle with numbers and calculations. It is a judgment. But judgments of this kind are at the heart of the decision to build or not to build an ABM system, not the statistics, the calculations about "cost-effectiveness," or how many people will be killed. These factors are important in the decision, of course. What is most important, however, is the total dynamics and the likely interaction of the policymakers on both sides. I come back to where I began and ask: can we play this game, which certainly will not buy us real defense, and at the same time achieve a rational world? My answer is no.

And then I must add this last fillip to it: I believe that the situation will be made more, not less, dangerous. We always underestimate our own capabilities and overestimate that of the other fellow. I think this is true of both sides, and it generates what I call a parallax effect. That is, if the Russians build a defensive system, we think it is better than it is, so we overbuild in order to penetrate it, and vice versa. Thus there is the real possibility that when everything is stabilized at some higher level and we are all relaxed because we have become used to it, the potential for destruction will have gone up instead of down.

For: Donald Brennan

Donald Brennan presently conducts research studies at the Hudson Institute, of which he is a founder and former president.

On the whole I accept Jerome Wiesner's technical characterizations. I accept, more or less, his characterization of Sentinel as it was originally envisaged. The views I present here are in support of a defense that would make a substantial difference against a Soviet missile attack, a system of a character and capacity missing in the original conception of Sentinel.

Here is what I deem to be the critical factor: most of the studies of performance of heavier deployment now possible of ABM defenses against major Soviet attacks — assuming that the Soviets do not make a major increase in their offensive forces in response to our improved defense—have shown that fatalities in the United States might be reduced from a figure in the range of eighty to a hundred to a hundred and twenty million down to perhaps twenty or thirty or forty million. Using the period of the mid-nineteen-seventies as a statistical base, this might change the fatality level from half the population to something on the order of ten per cent. Obviously, the remaining prospect of losing ten per cent of our citi-

zens is hardly likely to make one feel very enthusiastic. But these calculations could make a great difference in the kind of United States that would exist after an act of nuclear war.

By the same process that might save as much as ninety per cent of the populace, we would very likely be saving an even higher percentage of the country's productive capacity, communications, and transportation system. This makes a very great difference in the ability of the society to recover from such a blow. This is a degree of difference that other types of defense, notably traditional civil defenses, cannot make, as far as we can foresee. So the first observation I offer is that if the ABM defense systems perform more or less as expected they can make an enormous difference in the future of the country following an exchange of nuclear weapons.

I concede that the ABM systems are large, complicated, and untested in any final sense. There is some chance they may fail if subjected to the ultimate test of war, in ways that we did not foresee. This is a technical problem, as Dr. Wiesner says, and any scientist must agree it exists. But there is another side to this technical interaction that he did not mention and I would emphasize; that is, the offensive forces that may be fired against this defensive system also are large, complicated, untested systems — untested against the environment in which they are supposed to work.

Scientists in the current state of the art may have more confidence that a given offensive missile will reach its target than that a defensive system will head it off. But, of course, it can happen that the offense, too, may contain weaknesses not discovered in advance of its actual employment. The defense in actual performance may be worse than predicted, but it also may be much better than design-center expectations. There really are two sides to this coin. And if we are talking about the possibility of buying national survival insurance, the fact that there is a degree of risk that the insurance wouldn't pay off under some circumstances does not necessarily negate its value.

This brings us to the technical question of how difficult it is for the offense to nullify an ABM defense. The war-outcome estimates made by Secretary McNamara should obtain, at least if the Soviets do not work very hard at nullifying our defense. If they work very hard at counteracting our ABM system, then they conceivably could cancel the insurance value we expected to purchase with the new defenses. However, it turns out that, as far as we can see, it is difficult for them to shift the balance by further offensive development. This is a point I wish to stress.

One of the considerations that killed Nike-Zeus (and I was among those opposed to deploying it) was that the system looked easy to nullify. It had mechanically slewed radars; it did not have much tracking capability. The conclusion was that it would be fairly easy to design attack systems that would penetrate it. However, the best kinds of defenses that developed in the last several years do not suffer these deficiencies. While I agree with Dr. Wiesner that economic factors do not dominate here, one wants to have some sense of the costs.

If the Soviets could nullify one of these ten- or twenty-billion-dollar ABM defense systems by spending only an additional one per cent as much on their offensive force, then I, among many others, would agree that ABM is a very bad buy. It seems, however, not likely to be any such minor economic matter. In order wholly to nullify one of the major ABM defenses now under consideration the Soviets would have to spend as much or possibly even more money on their offensive forces as we would have spent on the defense in the first place.

While many authoritative statements were made in the past to the effect that it is relatively inexpensive to improve an offensive system to nullify an ABM defense, none have been true since 1964-65. As far as one can see from detailed current studies, offensive and defensive cost factors have been balanced out, at least for the past four years.

How stable are the estimates of performance I am citing here? Specifically, they are the claims that without an adequate ABM system we might lose, say, half the populace in a Soviet nuclear attack, while a substantial defense might save eighty to ninety per cent of the total populace and a propor-

tionate share of production and communications capacity; and that it is not cheap or easy for the potential enemy to nullify the system that would make this possible.

This is the kind of question to which there are no guaranteed answers. We must concede all the uncertainties Dr. Wiesner cites. It may be useful to try to put the issue in perspective with a comparison. We have come to have a lot of confidence in the security of the Polaris submarine component of the United States deterrent force. Why? It comes from the fact that we have spent half a billion dollars a year on research and development trying to find cheap and reliable ways of killing Polaris submarines, and nobody has found them. We can find cheap and unreliable ways of killing them, and we can find expensive and reliable ways, but the combination of cheap and reliable ways which would make all the difference has not been found, despite the best efforts of a lot of good people who have spent a lot of time looking. Basically it is because of this negative fact that we tend to consider the Polaris a valuable part of our deterrent force.

It is not true yet, but it is beginning to be true that a similar statement can be made on behalf of missile defenses as against the possibility of penetrating them. We have spent about half a billion dollars a year for four or five years (since the prospects of strong defenses have come into serious technical view) on means of penetrating these defenses, but nobody has yet found a cheap and reliable way of doing so. (This is not an argument that a cheap and reliable technique cannot be found.)

Of course, I have to concede that I am comparing two different situations. The Polaris submarine can escape altogether from detection and destruction; in the case of missile defense it is not possible for the country to escape scot-free. Nobody studying missile defenses believes that one can even begin to count on an absolutely impervious shield. I am talking only about the probability of holding fatalities to the range of ten to twenty per cent.

Now, in terms of the insurance value of reducing fatalities to that level, it is beginning to appear that these estimates have the kind of stability we have come to associate with the invulnerability of Polaris submarines. It can still happen that next week somebody will find a device or perfect an invention that will cancel or seriously alter every figure I have used here, but good scientific grounds for being skeptical that any such thing is likely to happen are now appearing.

I would offer a more technical argument on behalf of the future prospect of defenses. Although, as Dr. Wiesner said, there are many ways one can think of to penetrate a defense, there also are more and more potential ways of building up a defense. I believe that, essentially, all the possible means of penetration are known and openly discussed — warheads that maneuver, that can come in at low angles, or high angles, or on special trajectories; more warheads can be put in, more chaff, more decoys, more jammers. However, there is a much larger array of technical possibilities in improving the defense. Dr. Wiesner alluded to some of them in passing, like lasers and X-rays, and other mechanisms that have been studied for specific application to defense systems. No one of a fairly larger catalogue of diverse developments may work at the moment, but there is at least some likelihood of contributing to a major breakthrough on the defensive side.

Agreeing that these technical estimates cannot be exact, I believe they are nevertheless very important in establishing ranges for decision-making. For example, if I were convinced that improved ABM defenses could be neutralized for a minor fraction of their cost, or that they would only make a ten per cent difference in the fatalities in case of nuclear attack, I would lose interest in technical estimates of this kind. As it is, they seem to me to make a case that cannot be ignored.

What Dr. Wiesner refers to as questions of judgment, as opposed to analysis, do intrude when it comes to the ultimate consideration of the requirements of deterrence. If the Soviets begin building up a heavy defense, our military strategists would be apprehensive about the ability of our offense to

penetrate it; and this, therefore, would soon upset any understanding about stabilization of offensive forces and would launch a new arms race.

I do not myself believe, as I am sure Dr. Wiesner does not believe, that the United States requires as a fundamental part of its national security some fixed destruction capability — the capacity to destroy, say, seventy-four million Russians, or seventy-six per cent of Soviet industrial capacity, to cite two figures Mr. McNamara has used in his discussion of requirements for what he calls an "assured destruction capacity" for our deterrent force.

As a matter of fact, I do not believe that the United States has any fixed requirement for any large number of Soviet hostages. It seems to me that our basic military requirement is simply to make sure that we are not in an unfavorable position vis-à-vis the Soviets at any given or predictable time. If we are confident we are in a fair military position vis-à-vis the Soviets, there is no fundamental law of nature that requires that we should be able to destroy seventy-four million Russians. In 1936, to pick a year at random, we knew we could not kill seventy-four million Russians and not have Americans upset about it. I think that we could begin to work back toward a state of that kind, in which defenses begin to look more and more effective — and, as far as I am concerned, I am perfectly willing that defenses should look effective on both sides.

Dr. Wiesner's view — and he has pointed to this as our basic difference — is that neither the United States nor the Soviet Union would accept a move in that direction. This seems to accept the idea that for the indefinite future effective offenses will be based on a fixed requirement that we be able to kill, if not seventy-four million Russians, then twenty million Russians, or whatever number. I do not think this is the case, and I do not believe the senior members of the military staffs think so either. I know many high-ranking officers who do not accept any fixed requirement for the destruction of a large number of Soviet hostages, as long as we are in a relatively favorable defensive position ourselves.

The policy of the offensive deterrent theory has been increasingly persuasive over the past years. The technical prospects for defense in the later nineteen-fifties were rightly judged to be poor. As a result many of us assimilated the doctrine that, since the United States and the Soviet Union could not effectively defend against each other, each had to deter the other with large nuclear capability. As long as there was no really good alternative to a standoff of this kind, the way was open for the emergence of a distorted form of this doctrine of deterrence: i.e. since we must deter, we cannot defend. That, I suggest, is a non sequitur. I believe the United States is coming to a judgment of what Soviet capabilities actually are; and I see nothing in this to preclude deployment of ABM defenses.

There is another common argument against ballistic missile defenses that Dr. Wiesner did not mention. This is the theory that anything that makes war tolerable makes it more likely — the notion that horror is a deterrent. But tolerable in this instance means twenty or thirty million American people killed instead of a hundred and twenty million; the lesser prospect is hardly likely to make anyone overjoyed. I suggest that under the minimum foreseeable circumstances nobody is going to get button-happy. It is very unlikely that there is any American decision-maker whose behavior in a crisis, as far as his propensity for starting a nuclear war is concerned, is going to be significantly altered because he is told that his action will cost the lives of "only thirty million." And my reading of the Soviet bureaucracy is that it will react in the same way.

I find it very difficult to follow the reasoning that holds that the likelihood of war will go up if missile defenses are deployed. I am among those who argue the other way: we contend that if ABM defenses are deployed, they will at the very least considerably complicate the planning of an attack, and so a rather substantial additional barrier to the initiation of war arises.

The argument is most usually couched in traditional terms of an offense-defense arms race. ABM becomes a ploy in an unending spiral of defense followed by offense, followed by defense, followed

by offense, followed by defense, and so on. I can only say the same thing here I said in relation to the argument on the fundamental requirements of deterrence: it ain't necessarily so.

The question is basically one of attitude. If the American body politic defines as a fundamental objective for the Department of Defense that it must have an offensive force capable of killing seventy-four million Russians, and if the Soviets then start building a missile defense that looks as if it would reduce our capability to destroy Russians below that threshold, then, of course, there will be an offensive force response on our side. The Secretary of Defense would be obliged, in accordance with that dictum, to increase his offensive forces.

Mr. McNamara did precisely that in opposing an incipient Soviet defense by increasing the American offensive forces in response — and, indeed, increasing them considerably more than his own estimates of Soviet defensive capabilities required. But as I have said, it is not a fundamental law of nature that we must be able to maintain a fixed kill ratio of Russians. A much more sensible United States posture, it seems to me, which is in accordance with the dictate of keeping in a good military position vis-à-vis the Soviets, is to deploy ABM defenses instead. From many points of view, as Dr. Wiesner perceived, we should have much more interest in deploying defenses than in deploying offensive forces. I think the policy process in the United States will acquire that perspective sooner or later.

I cannot discern any fundamental necessity for the United States to respond to Soviet defense build-up with increased offensive force increments on our side. As far as one can see, Soviet attitudes are themselves already favorable to a defensive posture. In recent years they have been substantially and sharply increasing their offensive forces, but it is still probable that they have more of a doctrinal emphasis on defense as a way of military life than the United States has had in quite a few years. If the United States attitude were to go in the same direction, with both of us coming to place primary emphasis on defense, we might find it very easy to agree to an effective ceiling on offensive forces that would head off the kind of arms race that rightly concerns most students of these matters.

I do not want to treat lightly the prospect of an offense-defense arms race, but I believe there is a better way of dealing with it than by abstaining from defense systems, which, as Premier Kosygin rightly put it, will not kill people. The ABM is not intended to kill anything but lethal offensive missiles; it is intended to preserve human lives. Insofar as both we and the Russians cultivate that judgment, we can temper the prospects for an arms race, and in the process buy plenty of insurance for both the superpowers. There is no barrier that I can see to either the United States' or the Soviet Union's pursuing *this* kind of policy. We can, if we work at it intelligently, have both sound defenses *and* a world free of the terror and waste of a major arms race.

For: Leon Johnson

Leon Johnson was Director, 1961-65, Net Evaluation Subcommittee, National Security Council.

How do you want to live? Does living under a balance of terror excite and please you? Are you willing to accept, for all time, a national strategy that means living in fear of the Soviets, not just for today and tomorrow but for the rest of your natural life? Do you want actions of our government colored primarily by Soviet actions rather than based upon a reasoned analysis of what is in the best interests of our country and the best interests of our trusting allies? Do you want small and insignificant nations seizing our ships upon the high seas?

If you can answer "yes" to those questions, then you must have reveled in the tense situation and fear of impending doom brought about by the Cuban missile crisis. You must have been excited by the seizure of the Pueblo and waited impatiently for the next act of the drama.

I am not critical of our reactions to these crises. They were trials we had to endure; they were phases in our development, the results of the invention and deployment of new weapons. And it was these new weapons that brought about the balance of terror, resulting in the strategy of "assured destruction," the *only* possible strategy for our times.

My plea is that we do not accept as permanent a distorted version of this strategy that will lead to more and bolder confrontations with the Soviets, directly or by proxy, as they match or exceed our nuclear offensive capability. Such a strategy could lead to the subjugation or destruction of our nation if the Soviets should develop an effective strategic defensive force while, at the same time, we were led to believe that a nuclear balance still existed.

The strategy of assured destruction, or deterrence through a balance of terror, means that we must have the capability to destroy the Soviet Union as a viable nation even after suffering a surprise first strike. This is a radically new military concept. Only since the early nineteen-fifties have we believed that we must maintain a force in being capable of destroying a potential enemy. Prior to that time the planners held that we needed only sufficient force in being to defend the country while greater forces were created in order to carry the war to the enemy.

Under those circumstances we never insisted that our forces had to be sufficient to devastate an entire country. The ultimate objective was only to muster sufficient strength to defeat the enemy's forces and destroy his war-making potential. The war would end when the enemy sued for peace, surrendered, and accepted defeat. We assumed that victory would come well short of total destruction; and it has been our practice to lend moral and physical assistance to our enemies in rebuilding and resuming their places in the family of nations. We pride ourselves on being builders, not destroyers.

When the most knowledgeable authorities charged with the defense of our country can say that our strategic offensive and defensive forces have the capability to blunt any enemy attack, to keep the damage to our country to an acceptable level, and to permit us to continue as a viable nation, then we can change back from a strategy of assured destruction to the earlier concept of measured damage. It would no longer be essential to destroy an enemy as a viable nation. It would be necessary to inflict only sufficient damage to insure that he recognized that the employment of armed force against us was not rewarding, and that there are better ways to settle international disputes.

Each major weapons change and each spectacular technological advance leads to changes in the basic strategic principles of war. The pendulum swings, although sometimes slowly, and the old laws of force and counterforce, of action and reaction, hold: when the offense outstrips the defense, intensive defensive efforts are applied, and defense is soon back in the picture.

When the nuclear bomb was first exploded, it dwarfed man's concepts and momentarily made him believe that the ultimate weapon had arrived. Then the bomb was placed upon the end of a guided ballistic missile. And another "ultimate" weapon came into view. However, there was soon talk of effective defenses against the simple missile. Decoys and penetration aids were introduced on the offensive side to restore the ICBM to supremacy. But defensive missiles also were making advances — and, indeed, the knowledge gained in making improvements in the offense has been applied to improving the defense, and vice versa. Thus the never-ending contest has continued even as the contending forces departed the earth and left the atmosphere behind.

The assured destruction strategy has worked as well as it has because we have had the preponderance of strategic offensive force. Significant changes, however, have been made in the balance. Within the last three years the Soviets have greatly increased

their offensive missile force. And we know that there has been a sharp change in Soviet policy, or at least in our interpretation of that policy. In the spring of 1965 the Secretary of Defense stated that the Soviet leaders "have decided that they have lost the quantitative race, and they are not seeking to engage us in that contest." At that time the Soviets had less than three hundred and forty intercontinental ballistic missiles, or at least we give them credit for about that number.

The change that has taken place is demonstrated in some figures cited by Secretary of Defense Clark Clifford that the United States had 1,054 ICBMs and the Soviets nine hundred ICBMs. Reports released over the past two years indicate that a new ICBM has been added to the Soviet inventory approximately every second day. Any knowledgeable person examining these figures must recognize that the balance of terror is still in full operational effect. These figures refer to Soviet strategic offensive weapons. We also have the testimony of former Secretary of Defense McNamara early in 1968, which cited the installation of a Soviet ABM system around Moscow and warned that we must "plan our forces on the assumption that they will have deployed some sort of an ABM system around their major cities by the early nineteen-seventies."

That the Soviets have a different outlook on ABMs than our own authorities have had is indicated by Mr. Kosygin's statements in London in February, 1967. As the *Washington Post* reported, "Kosygin distinguished between defensive and offensive weapons and said the latter were less likely to increase international tensions. He admitted that the ABM system was more expensive but said cost could not be a criterion for this decision."

Should the Soviets deploy an ABM system around Moscow and their major cities in the early nineteen-seventies, such a condition could be exceedingly destabilizing. Certainly we would not test those defenses. Should the Soviets believe, even mistakenly, that their defenses could blunt an attack of ours, it would be almost as bad for us as if it were true. Should they believe they could blunt an attack, with acceptable losses, and so announce to the world, the world would be prone to believe them. It could be expected that many U.S. citizens would also believe them, and the uproar could be much worse than the cry of "missile gap" we experienced in 1960. If we had in the meantime lost the six years of the lead-time necessary to build and install a defensive system of our own, there would be no way to redress the balance. We would be subject to that Soviet nuclear blackmail we avoided for the past twenty years.

Now, let us assume that we will continue to operate under an assured destruction strategy, the offensive concept we are operating under at the present. The principal arguments for the assured destruction strategy are:

☐ It should deter a nuclear attack upon the United States as long as the Soviets believe they will be destroyed by retaliation or until they are convinced the United States is about to launch an attack upon them.

☐ It should permit the United States to pursue its foreign policy up to the point of direct confrontation with the Soviets.

☐ It should reduce the reasons for an arms race and help to hold within bounds the cost of strategic forces if both sides are convinced that assured destruction can always be maintained.

The arguments against the assured destruction strategy are:

☐ It is not a war-waging strategy and provides no war-termination capability. Should deterrence fail and general nuclear war develop, it can be expected to result in the destruction of the United States as a viable nation.

☐ It makes it essential for the United States to consider Soviet vital interests more carefully and avoid transgressing them, recognizing, all the while, that it is impossible to know exactly what the Soviets consider those interests to be.

☐ As the United States strategic offensive forces have little coercive value and little other value except for the deterrence of general nuclear war, other major forces must be provided, or else lack of such forces must be accepted as an important limitation on national policy.

☐ It is not a strategy that encourages other nations to ally themselves with the United States because they cannot believe that the United States would support them, defend, and save them, regardless of what commitments had been made, if it meant the assured destruction of the United States.

I repeat, the strategy of assured destruction could fail if the Soviets ever believe they have sufficient defensive capability to blunt or make acceptable the damage that a U.S. attack could inflict upon them. A major damage-limiting capability, then, could result in an unbalanced Soviet view of relative deterrence. This could lead to more aggressive Soviet actions and a reduced Soviet willingness to negotiate over misunderstandings. The United States, possessing no important damage-limiting capability for itself, would be under great restraint in all its actions and subject to nuclear blackmail. Assured destruction is a reactive, not a forcing, strategy; the security of the United States and the future of our people and society would be almost completely dependent upon the Soviet Union and to a lesser extent upon Communist China.

Now let us see what the results of adding an effective ballistic missile defense to our offensive strategic forces could be. The arguments for such a strategy are:

☐ It would deter Soviet nuclear attack upon the United States unless they were convinced the United States was about to launch an attack upon them.

☐ It should produce a war-waging posture that would permit the termination of war under conditions favorable to the United States.

☐ It would permit the United States to pursue its foreign policy with forthrightness and with consideration, but not compelling fear, of the Soviets.

☐ It should permit the United States to use general-purpose forces in limited situations with more freedom of action than does the present policy. The Soviets would have to act with more care in supporting wars of national liberation and in pushing world revolution, or in employing direct conventional military pressures.

☐ Should over-all deterrence fail, it would give the President the option of a flexible response rather than a spasm response, as the nation would not lie naked to the Soviet attack. Our weapons and our control systems would have more chance of survival for use as needed.

☐ It might lead the Soviets to a more reasonable attitude toward meaningful arms-control measures because the great relative wealth and economic capability of the United States, when applied to the task of developing a greater security position, might convince the Soviet leaders of the folly of challenging us further in the arms race and make them turn to less threatening forms of competition.

The arguments against this strategy are:

☐ It may be that it is not technologically attainable at the moment. However, it is certain that present ABM potential could reduce the damage that the United States might suffer. It should be able to let us survive as a nation for a period before it attains the means of reducing casualties to a large extent.

☐ It might engage the United States in an all-out arms race with the Soviets, which could be expensive both in dollars and in talent. However, it is a race we should be able to win, and the race may in fact be in progress at the moment.

We can only consider the strategic arguments in the light of contemporary political reality. The world situation has not stood still. The Soviets, through increased activities in the Middle East and the Mediterranean and by their repressive actions in Czechoslovakia, appear to be serving notice upon us that they consider a new day to have dawned. It appears that they are less concerned with Western reactions. They move when they believe it to be to their advantage.

The New York Times of October 29, 1968, reported that General Lemnitzer, the Supreme Allied Commander in Europe, said the Soviet-led invasion of Czechoslovakia was a "complete tactical surprise" and tipped the European power balance in favor of the communist countries. Admiral McCain, the recent American Naval Commander in Europe, has warned that the Soviet navy is building up a strong capability in the Mediterranean. The *Los*

Angeles Times, on November 12, 1968, quoted from the official Soviet government newspaper, *Izvestia:* "'The Mediterranean should be turned into a sea of peace. This can be achieved only by active struggle against American imperialism whose political and military system in the Mediterranean Sea should be liquidated.' *Izvestia* criticized plans for the creation of a North Atlantic Treaty Organization naval force with headquarters in Naples."

Our capability for assured destruction seems to have little dissuasive value when such Soviet moves are contemplated, even when we warn that results could have a decided disadvantage in terms of our national interests.

The world's technical and scientific capability has not reached a plateau. If our scientists can build the weapons to penetrate enemy defenses, they can build weapons to stop enemy weapons from penetrating our defenses. Too much is at stake to do less.

When the official military publication of the Soviet Union, edited by Marshal V. D. Sokolovsky, contains such a preposterous statement as: "Imperialist countries openly proclaim their mad plans to liquidate the Soviet Union and other Socialist countries through a new world war," and when they add such statements as, "Taking this into account . . . the party is taking all steps to strengthen the defensive powers of our motherland and to increase the combat readiness of the Soviet armed forces," it must be apparent how little we understand each other. Until there is a better understanding and a meeting of the minds, our military posture must be one of strength across the board and it cannot be complete without an adequate defense against Soviet missiles.

It is time to recall that a strategy based on self-interest includes, ipso facto, the defense of population regardless of the other side's statements, intentions, or reactions. Failure to realize this will in the long run be tremendously constraining, destabilizing, and costly to our foreign policy and could cause the death of our great country.

Finally, we all would join in this hope that both the Soviets and ourselves will continue to operate under a policy of deterrence, long after our weapons of offense and defense have been retired for old age. However, this deterrence does not mean a United States helpless in the face of Soviet nuclear blackmail, but, as Richard Foster of Stanford Research Institute has said, "a deterrence which permits the continuance of unhindered access to other free countries, a deterrence which permits the fundamental rights of freedom of the seas, international airways, and inner as well as outer space."

Against: George S. McGovern

George McGovern is the junior senator from South Dakota.

The anti-ballistic missile is a most remarkable device, to say the least. It is remarkable for its technology and for its capacity to devour large sums of money. But most remarkable of all is its political effect — an effect so potent that our country is about to embark on the deployment of this defensive missile system before it has been carefully evaluated, and at a time in our national life when we ought to be most interested in reducing both the costs and the hazards of the arms race.

I have already recorded in the Senate my own conviction, at least my tentative conviction, that it would be a national blunder of major proportions — militarily, politically, and diplomatically — for the United States to deploy a defensive missile system on the basis of our present knowledge about ABM and about the international situation into which we propose to inject this new and dubious armament system. I am convinced that the proposed ABM would be obsolete, as Dr. Wiesner has

indicated, before it could be constructed. I read the evidence to indicate that the Soviet Union could very quickly overwhelm such a system with considerably smaller investment in their offensive capability. This, after all, is precisely what we have done in recent years in response to the very limited ABM system we think is now being deployed around Moscow.

No one has more clearly summarized the case against a full-blown ABM system than did former Secretary of Defense McNamara when he said on September 18, 1967: "Every ABM system that is now feasible involves firing defensive missiles at incoming offensive warheads in an effort to destroy them. But what many commentators on this issue overlook is that any such system can rather obviously be defeated by an enemy simply sending more offensive warheads, or dummy warheads, than there are defensive missiles capable of disposing of them. This is the whole crux of the nuclear action-reaction phenomenon."

Then Mr. McNamara added: "Were we to deploy a heavy ABM system throughout the United States" — and keep in mind that it is the heavy system that is being discussed here, not the phony, so-called China-oriented Sentinel system — "the Soviets would clearly be strongly motivated to so increase their offensive capability as to cancel out our defensive advantage. It is futile for each of us [meaning each country] to spend four billion dollars, or forty billion dollars, or four hundred billion dollars — and at the end of all the spending, at the end of all the deployment, and at the end of all the effort, to be relatively at the same point of balance on the security scale that we are now."

I believe that an ABM deployment by the United States would actually decrease our security and our capacity to conduct an intelligent and rational foreign policy. It would do this not only because it would be easily penetrated by the Soviet Union at less cost, if they chose to do so, but also because it would lead to a further escalation of the arms race and a worsening of Soviet-American relations.

Beyond these considerations, the allocation of billions of dollars of public funds in ABM at this time would actually threaten our internal national security in a peculiarly painful manner, depriving us of funds urgently needed to cope with the explosive social and economic needs of our own society and of the world in ferment around it.

We could, as a precaution, do what I assume we would do, if we had the good judgment to back away from the actual deployment of this missile system — that is, continue with research and development, even to the prototype stage, on defensive missile systems. Then, if new breakthroughs should occur on the technical front, or if new information comes to us about what our potential enemies are up to, we would be in a position, if necessary, to consider deployment of the system. This is the prudent alternative to plunging ahead now in the face of highly doubtful knowledge and present technical difficulties. And it is not only a sound, businesslike, and scientific approach to the matter, it also gives us diplomatic flexibility at a critical moment in our relationship with the Soviet Union. The possibility of an arms agreement between the Russians and ourselves that would make it possible for each side to scale down both defensive and offensive missile spending is considered a real prospect by almost all observers — if neither side tilts the balance.

When the Administration yielded to the pressure of the military and agreed to deploy a thin ABM system, supposedly oriented toward China, this could not, in my judgment, be accepted as a security decision based on a broad view of national and international priorities. It was, rather, a surrender to mounting political pressure from military-minded senators and congressmen and generals and arms manufacturers and their supporters. And all of this was fed by the tragically mistaken impression that it is possible and reasonable to calculate national security in mathematical terms, related almost exclusively to the capacity of our defensive and offensive armaments.

The political pressure on the President and on the Department of Defense to deploy the ABM did not suddenly appear in 1967; for more than a decade pressure had been directed in the most intensive fashion against President Eisenhower, later against

President Kennedy, and, throughout his Administration, against President Johnson. All three Chief Executives — different as they were in political background and orientation — staunchly resisted the demands, first for Nike-Zeus, then for the Nike-X system. The important point is that if they had surrendered earlier, as President Johnson finally did, those systems would have been built and would now be totally obsolete and worthless. We would have only the waste of thirty or thirty-five billions of dollars for our efforts.

I am confident that the system now being proposed will prove equally obsolete and equally worthless by the time it can be deployed. I believe that when President Johnson finally bent before the ABM deployment pressure he committed what may prove to be, next to the escalation of the war in Vietnam, the most costly blunder of his Administration. Mr. Nixon could perform an invaluable service to the American people, and to the cause of peace, if he would begin not only by ending our military involvement in Vietnam but also by reversing the ill-advised authorization of the ABM system. To do so he would only be returning to the strategic concept that has served the world well in the postwar years — recognizing that the only real defense against the sophisticated missile system of the Soviet Union is our continued capacity to deter the use of that system, if in fact the Soviets ever seriously consider using it.

The Johnson Administration attempted to justify the abandonment of its own previous, clearly articulated opposition to the ABM by offering it as a temporary five-billion-dollar holding action against China, projected into the nineteen-seventies. The rationalization soon became so patently absurd, as information became available about the delay in China's missile development, that the argument was dropped before the debate even got under way on the Senate floor. I received no answer when I asked the proponents of the ABM why they had billed this new system as a defense against China and then declared a few weeks later that the system could be abandoned if the Russians would agree not to build one.

The truth is that if we begin deploying a five-billion-dollar thin system, as it is called, the political and economic pressures will very quickly accelerate until we have poured twenty billion or thirty billion or fifty billion and perhaps a hundred billion dollars into this system. I do not believe many members of Congress seriously doubt that this is the case. If the Nixon Administration chose to join with those of us who are fighting ABM, I am confident we could head off this explosive, destructive exercise in futility. The Congress, and particularly the Senate, has been subjected to much information and argument on ABM — some of it behind closed doors for security reasons. This leaves the impression that the matter is hopelessly technical. It isn't really. Congressmen can understand what is at issue here and recognize that the real questions are primarily political in nature.

One thing that should be emphasized is that any system of defense against thermonuclear missiles is qualitatively different from the bomber defenses against which General Johnson and I flew as bomber pilots in World War II. In that war it was assumed by both attackers and defenders that on any given raid most of the bombers would reach their target, most would drop their bombs at least somewhere in the vicinity of the target and would damage it if they did not destroy it, and that most would return to their bases to fly again in future missions. The job of the defender then was to impose such a heavy attrition on the attacking bombers that destruction of the target would not be worth the price in men and lost striking power. Generally this critical attrition rate was surprisingly low. For example, on that famous night during the Battle of Britain when the defenders were able to destroy just five per cent of the attacking German bomber force, the battle was won. The bombers did not return.

But missile warfare is as different from this as night is from day. The smallest thermonuclear warhead is still considerably more powerful than the Hiroshima and Nagasaki bombs that ended the war

against Japan. It can destroy any significant target, except a few of our largest cities, which would require two or three warheads for total devastation. So, while a five-per-cent effective air defense won the Battle of Britain twenty-five years ago, ten or even fifteen times that effectiveness would be meaningless in a thermonuclear war. Every significant target probably would be attacked by a dozen or more missiles, averaging perhaps four or five warheads each, so that even a ninety-per-cent effective missile defense could not prevent a catastrophe of unspeakable proportions in the defended country.

One should also keep in mind that the Soviet Union is not likely to remain static if we proceed in the deployment of an ABM system. The only reasonable assumption is that the Soviets would respond the same way we did when we began to get evidence that they were deploying a limited defense system around one city, Moscow. For a relatively modest expenditure, we began to develop the kind of penetration aids and multiple warheads that have already enabled us to overwhelm that system. And, of course, this also has left the Soviets in a much more vulnerable position in the event of a nuclear exchange than they were in before they began deploying their anti-ballistic-missile system.

The history of this kind of escalatory defense-offense spiral demonstrates that the defense always labors under at least two very serious disadvantages. The first is mathematical. Let us take a hypothetical situation. Currently the Soviets have approximately one thousand offensive warheads. If we were to build a ninety-per-cent effective ABM defense system, we must assume that they still would be capable of reaching us with a hundred warheads — and the loss of American lives would still be calculated in tens of millions. Now suppose the Soviets recognized the survival value of our ninety-per-cent effective ABM system by increasing their warheads from the present one thousand to four or five thousand (which is what we did, in effect, with the conversion of our Polaris missiles to the Poseidon system). Our ABM screen then would let through not a hundred warheads, but four or five hundred. If we wanted to maintain the pre-ABM Soviet response level of "only" one hundred hits on our country, we would have to build an ABM system so tight it could knock down ninety-eight per cent of four to five thousand incoming warheads.

No one in his wildest fancy has ever suggested that a ninety-eight-per-cent effective missile defense is a technical possibility. In fact, as Dr. Wiesner has pointed out, the probability is that during a heavy attack the effectiveness of the ABM system would drop to near zero since thermonuclear explosions when set off in the atmosphere create their own radar blackout. The ABM's second inherent disadvantage is economic. Dr. Brennan said that if it could be demonstrated that it would cost a hundred times as much to deploy an ABM system as it would to make the offensive missiles to overcome it, he would not advocate it. Well, I don't know whether it would cost a hundred times as much or not. But I do know that we converted our Polaris missiles to the Poseidon system, which enormously increased their striking power, for a cost of about 3.2 billion dollars. And I do know that the five-billion-dollar Sentinel system we are talking about as a defensive system would be rendered totally useless by the three-billion-dollar investment we made in our offensive power in the Poseidon system. Poseidon would go through Sentinel like a hot knife through butter. The heavy ABM system is projected at a minimum cost of twenty billion dollars, and even that would be no match for the offensive Poseidon-type system we brought in for three billion. Those ratios may not be sufficient to get Dr. Brennan over to my side, but they are certainly not insignificant.

Given the high levels of offensive armament that both the major powers will have by the mid-nineteen-seventies, the proposed terminal ABM system, even in its heaviest form, would, from all indications that I have seen, be ineffective. And this is a system that could easily cost a hundred billion dollars, if one includes the cost of the fallout shelters which many experts believe will be necessitated by the Sprint anti-ballistic missile, now included as a part of the full system.

Why, then, are the Joint Chiefs of Staff recommending that such vast sums be spent, and why has a majority of the Congress already approved this decision? Curiously, the debate over construction seems almost irrelevant to the actual decision-making process. I have been actively involved in the debate on ABM from the very beginning. I was much impressed when Senator Stuart Symington, the former Secretary of the Air Force, who at one time was considered sympathetic to ABM, explained in great detail why he now believes the system is militarily ineffective and would represent an enormous waste of public funds. This, by any definition, was expert testimony, and I have waited for an effective rebuttal by the ABM proponents. It has never come. Neither have we had from the scientific community any really convincing arguments as to the effectiveness of this system. You will note the heavy qualifications that mark the pro-ABM arguments in this discussion. I think the reason is that the military and scientific arguments against ABM do not need to be rebutted because the compulsion for funding the ABM is not really military and scientific at all — but economic and political.

Politically, the ability to get support for highly dubious multi-billion-dollar projects such as the ABM rests on two factors: first, exploitation of the national feeling of insecurity that comes any time we debate a proposal with a defense label attached to it; and second, the perfectly legal and very substantial rewards the military sector can bestow upon communities and states whose congressmen are cooperative.

I am not implying that supporters of the ABM have sold their souls to the armament lobby. These men, many of whom are among the most respected of my colleagues, are acting in what they believe to be the interest of their constituents. The creation and the continuance or abolition of defense plants or installations affect the jobs and the lives of thousands of people. They seek, in supporting projects of that sort, through a kind of rationalization, to serve their constituents' interest. So, let us face it, the anti-ballistic-missile system is little more than a gigantic make-work welfare project sponsored by the military-industrial complex. I charge that this kind of artificial and unimaginative public spending is degrading rather than strengthening our society, and that it is doing so to an extent that more than offsets any temporary military advantage we may gain from it.

What is needed is a bold and imaginative foreign policy that will guarantee our national interests by other than primarily military means. Once we have this we can turn to rational limits of arms production — and meet the economic fears of our beleaguered congressmen by means some of us suggested in the Congress five years ago: i.e. an economic conversion act to assist our defense industries, our local communities, and our states by converting excessive military capacity to the production of urgently needed civilian facilities.

We live in a great and affluent country. But it is a country now confronted by the most urgent, pressing kind of domestic needs. It is not too much to say that an even greater threat to our survival than any posed by nuclear missiles may lie in our present inability to redirect the floodtide of money and resources flowing into the military sectors into rebuilding and reconstructing the United States. We cannot afford to do otherwise.

A Discussion

After making the preceding statements, Messrs. Wiesner, McGovern, Johnson, and Brennan were joined by Adolf A. Berle, Jr., Freeman Dyson, Charles M. Herzfeld, I. I. Rabi, Franz Schurmann, and Center Fellows Harry S. Ashmore, Neil Jacoby, and Harvey Wheeler.

BRENNAN: I think I can demonstrate that Senator McGovern has not done all his homework. It is not cheap to nullify a good defense. I know of no serious study anywhere, classified or unclassified, that suggests that it is presently cheaper to nullify a good defense than it is to build one. Senator McGovern repeated the standard shibboleth when he said that the Soviets could nullify a defense of ours for a smaller outlay than was required to install it. He says we did this when we extended our offensive force in responding to the new Soviet defense system. I would guess that the United States has committed about five times the cost of the Soviet defense in order to neutralize it.

The Senator uses the figure of 3.2 billion dollars for the Poseidon program. And the Minuteman III program costs about two billion dollars, depending on how many missiles are deployed. So it was about a five-billion-dollar arms program that Secretary McNamara laid down in offensive-force response to about a one-billion-dollar Soviet missile defense. Nobody knows for sure, of course, what the Soviet defense system cost, but it is a small and modest system and the neutralization of it as programmed by Mr. McNamara was several times as costly. Now, of course, what has been programmed in Poseidon and Minuteman III will, in fact, offset a much more substantial defense if the Soviets put one in.

Senator McGovern also said that the heavy ABM system is no match for Poseidon. The Defense Department would not agree. It is certain, of course, that if the Soviets put in something like the Poseidon program, and if we put in what Dr. Wiesner earlier referred to as the Posture B system, some of those Poseidon-type warheads could get through — but an awful lot of them could not. We are talking here in statistics, but these statistics may well be important for the survival of something we think of as the United States. In the survival sense, the heavy ABM system may very well be a match for Poseidon, and if the Soviets put in a like defense, then it's not at all obvious that the five billion dollars or so we have already committed to offensive forces would neutralize that larger program.

Neither is it obvious that we should want to increase our offensive forces this way. I would argue that the five billion dollars already committed to an offensive-force response to the Soviet defense would have been much better spent on a U.S. defense force. That might degrade our deterrence somewhat but it would greatly reduce the number of American

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hostages to Soviet offensive forces. And we would not have contributed to the offense-defense arms race if we had chosen that direction of defense.

WIESNER: I would like to clarify what I think Senator McGovern meant. He compared the Sentinel, that Edsel of ABMs, with the Poseidon. But, of course, he could have said that we did not have to buy the Poseidon to offset a Sentinel-type ABM defense. The original Polaris missile was more than a match for such a defense and, even with two-thirds of the fleet at home, would still have been a match for the Sentinel. I think all the offensive missiles on the test range are probably a match for it. More than that, I think the Sentinel is totally useless — most of the experts generally admit that now. So, if the Sentinel, which also costs five billion dollars, is not a match for our existing offensive systems, we did not have to spend a nickel to improve them.

But Senator McGovern's basic point is certainly true. The Poseidon deployment would undoubtedly overwhelm the Sentinel system. Would half the Poseidon overwhelm the Sentinel, Mr. Brennan?

BRENNAN: I would hate to quote some of the estimates I have heard of what would be required to overwhelm the Sentinel.

WIESNER: All right. So you can give any ratio you you want here, 50–1 or 10–1; the ratio doesn't have to be that extreme. But I think the Sentinel will always end up on the losing end.

Dr. Brennan said one thing, which he seemed to suggest we were in agreement on but which was just the opposite of what I was trying to say. He interpreted me as suggesting that there are many ways to make a good anti-missile defense. I was not saying that at all. I said that it is conceivable that some genius might invent a totally different kind of defensive system, one not dependent on shooting things up in the air and setting off nuclear weapons, and therefore one that will be more effective than the kind we are now making. The key point here is that as long as we are dependent on the present mode, I do not think we will ever make a defensive system that can win out against the offense. Perhaps we could depart from this mode — someone making a strong enough laser beam, for example, or a strong enough nuclear power beam of some kind — but I was not suggesting these are possible; they are, in fact, very unlikely. And that is a significant measure of how tough this problem is, rather than how easy I think it is.

Just to add to the list of offensive possibilities — the multiple warheads and decoys — both the United States and the Soviet Union now have rockets that can carry the increased capacity of multiple warheads. Our C-5 rocket could probably carry a fifty-thousand- or a hundred-thousand-pound payload to the Soviet Union, and I suspect their rockets could carry the same. So both sides have the possibility, if either wanted to do it, of setting off enormous bombs at very high altitudes and generating all kinds of interesting effects.

One thing that became clear in all the calculations made on the Nike-Zeus — and I suspect it's also true of Mr. McNamara's calculations in his 1967 Defense Posture statement — is that nobody paid adequate attention to the heat effects; low-altitude explosions set off thermofluxes that could ignite much of the ignitable structures below. It is probably true that the bombs in the new system are smaller and may not give this effect, but I think there is more there than has been considered.

And we forget — even General Johnson has forgotten — the airplane. The United States still has six hundred bombers and the estimates are that about half of those would get through to their targets. That sounds like a fairly effective deterrent. But we always leave this prime factor out of the calculations. Whenever I mention this around the Pentagon I get the dirty look usually reserved for people who drag a dead horse into the living room. The fact is that the Soviets, for a whole series of reasons — industrial, technical, strategic — never built quite the air force we did (they have at least a couple of hundred long-range bombers), but we never built quite as good an air defense system as they did; it is tougher for us since a lot of our strategic targets are on the coasts. In any event, no one would claim that we are totally invulnerable to the Soviet air force, and they certainly aren't to ours.

There are other unmentioned possibilities that complicate this issue. We could even go back to a big program of modern airplanes for nuclear delivery. The Air Force has been trying to do just that for years, but they just haven't been able to design the right airplane — or at least they couldn't convince Mr. McNamara that they had. (He didn't design a very good one either.) I feel that one could do better in that regard with a little encouragement.

Now, General Johnson's statement about the problem we have with regard to the Russians does not seem to me to take sufficiently into account the maneuverability we have in controlling the arms race, or even our responsibility for contributing to it. When I first began to play with these toys, working at the M.I.T. radiation laboratory, I believed everything I was told. I spent the nineteen-fifties working very hard on air defense, on missiles, on a variety of things, because I was told by my superiors that the Russians were ahead of us, that they were working against the day when they would get enough power to carry out a surprise attack and wipe us out. This, it was said, was their only purpose in life. Then we graduated from that to the "missile gap," which, in fact, I helped invent. But soon it became clear that many of us had just misinterpreted the signals. Eventually, when we got enough information, we saw two things: first, the Russians had opted out of the bomber race quite early in the game; they never built a bomber force capable of wiping out our force or doing the other things we said they had wanted to do and could do. And, second, for a long time they were prepared to settle for a missile force considerably smaller than ours.

Then, a few years ago, the Russians decided to build more missiles, and they are now drawing equal. I *hope* they are only drawing equal. I hope they don't intend to double what we have, because if they do we obviously will respond. I don't know why the Russians began to build more missiles. Maybe it stems from their embarrassment over the Cuban missile crisis. Maybe it stems from their embarrassment at having Mr. McNamara stand up in the Congress every time he had to explain why he was not buying more missiles and point out that the United States already has four times as many as the Russians. Whatever their motivations, the Russians began adding to their missiles.

This point is important, and one that General Johnson seemed not to appreciate adequately when he said we might wake up one day and discover that the Soviets had made a defensive system that rendered our offensive system inoperative. I have been trying to say that nothing like this is in the cards with these massive, expensive, hard-to-build, hard-to-deploy, hard-to-train-people-to-operate systems. This is real protection. Our information is good enough and the time-lags are such that long before a ballistic missile defense system could be deployed to protect enough of the Soviet Union to make any difference we could sail past them, just as we did in the case of offensive missiles. In any event, now that we have led the Soviet Union in this new weaponry for years, I think it might be an interesting experiment to see whether we couldn't cool this whole business off by slowly cutting down on the numbers we all live by.

Dr. Brennan pointed out correctly that if we build a defensive system that cut in half the number of missiles that fell on our country it would certainly cut down the damage to our country. I don't know how many Soviet missiles are targeted on New York City at this moment. I'd be very surprised if it is less than ten; maybe it is more. And it only takes one to do a pretty good job on a city, even one this size. But, instead of building defensive systems, why not get the same effect by cutting down on the number of offensive missiles? That is the alternative and I think it would work. We could say to the Soviets: "We will cut down a little more if you will cut down a little more." Let's see whether we both can't race in the other direction, and see who can count the most empty holes on the launching sites ten years from now.

JOHNSON: I would like to ask Senator McGovern this: if we could build a ballistic missile defense for a reasonable figure that he felt would insure the survival of the country, would he vote to build it?

McGOVERN: Yes, if there were a way to build an airtight system that would put a country in a genuinely secure position, I think both the Soviets and the United States ought to build it, and any other nation who can afford it. But that is not possible. The thrust of my argument — and I think Secretary McNamara's argument from the very beginning, too — is that this is not what happens when you build a defensive system. The other side promptly counters it by increasing its capacity to penetrate the new defenses. So we're postulating something that is just not in the cards.

I have suggested that we keep alive the research programs looking for that kind of breakthrough General Johnson predicates in his question. If the day ever comes when it looks as if we've found a foolproof defense, why, it might be wise to go ahead and deploy it. But I see nothing in present proposals to indicate that likelihood.

In regard to Dr. Brennan's statement, the point I was trying to make about the conversion of the Polaris to the Poseidon missile system is that for a little over three billion dollars we were able to convert six hundred warheads to four thousand. Presumably it will now take four thousand defensive warheads to knock them all down. Now, that's about the capacity we will get for the twenty billion dollars Secretary McNamara estimated for the Posture B defense, which is the heavy ABM defense system.

The offensive system we got for three billion dollars when we stepped up Polaris to Poseidon was built on the theory that the Soviets might be putting in a heavy ABM system. It turns out that, instead, they were installing a kind of half-baked system around Moscow alone. And that's all, that one system, plus a dubious bomber-defense system around Leningrad. That's the extent of the ABM system against which we have arrayed all this additional striking power. On the basis of that one little scare about what they were doing around Moscow, we overbuilt to a capacity that could pulverize the entire Soviet Union and the rest of the world many times over. No one can deny that they can do the same thing to us, if they are moved to. So I must reject the argument that we are buying additional security when we go down this so-called defensive route of deploying what very well may prove to be an ABM sieve through which offensive missiles can still pour in with devastating volume.

BERLE: I do not think the anti-ballistic-missile system should be deployed. The research on it should be done and the information acquired but then we should stop there. I can find no technician who is prepared to say that an anti-ballistic-missile defense could be airtight. One argument for deploying an ABM system is that it could reduce the number of our fatalities to ten or fifteen million, but we have no way of determining whether we could sustain ten or fifteen million deaths without having our whole social, governmental, and political system smashed and our country so disorganized that it would be brought to the point of defeat. So until someone is prepared to tell us that an anti-ballistic-missile system can prevent even that "slight" penetration by an enemy, there is no reason to assume ABM would be effective.

BRENNAN: The technically informed people tell us that if we spent from ten to twenty billions for ABM it would reduce fatality levels from perhaps fifty per cent of the population to ten or fifteen per cent, and it probably would save an even greater percentage of our industrial resources. This would be true in the kind of war that could happen in the middle or late nineteen-seventies, pitting ABM against advanced technology skillfully employed against the United States. It is a combination of these two reductions that would make the difference between having a country that could reconstitute itself within some relatively short number of years (say, five or ten) after the war, and having a country whose recovery in any time period would be highly problematical.

WHEELER: In these calculations, should one add a factor for survivors who are burned, wounded, or are made ill?

BRENNAN: The figures from Secretary McNamara's 1967 Defense Posture statement are for fatalities only — deaths from prompt blast and fallout activity. Many people believe, though, that when you have substantial defenses operating there is a much

better chance of dealing with the survivors. If you lose, say, half the people and three-fourths or seven-eighths of a country's resources, it is much harder to take care of survivors.

McGOVERN: Do you feel that Secretary McNamara is the most reliable source of information about the reduction in fatalities if we were to deploy an ABM?

BRENNAN: Mr. McNamara is known to have been one of the most intense critics of anti-ballistic-missile defenses for the last several years. It is not to be expected that his estimates on fatalities would be biased in favor of the defensive system.

HERZFELD: I've looked at many estimates of this sort, examples given in Mr. McNamara's testimony and by other people, and while there are wide ranges, of course, depending upon the assumptions one uses, these numbers are typical and fairly represent the best state of our understanding.

WIESNER: Would it be fair to take these numbers and characterize them this way: that if we built a twenty-billion-dollar ABM system and if it functioned just as the designers predict it will — namely, that everything works, the thousands of GI's who man the launching sites are ready, the computer programming is right, there are no surprises in the incoming missiles, and the tremendous battle that takes place in the skies does not produce such chaos and blackout that everything quits working (all reasons why I think it will not work) — then the casualties would be reduced to fifteen per cent of our population, or thirty million people. So that the truth of these numbers and estimates lies somewhere between what I think is a very optimistic figure of thirty million deaths and, at the upper end, a hundred and twenty million deaths based on what we project the Russians could do against no defense. It comes down, then, to a matter of somebody's judgment, because there is no way of knowing what the Soviets are going to do, and there is no way of knowing how the ABM system is going to function. We would be absolute fools to predicate our behavior on an assumption of ideal performance of everything that goes into an ABM system.

BERLE: The debate on numbers is immaterial. The question is whether even the most optimistic estimate of fatalities means the smashing of the central nervous system of our whole society.

WIESNER: I think you are absolutely right. A sudden death of thirty million people, or even ten million, would so disrupt this country that it would panic.

BERLE: So, even accepting the low estimates of fatalities by defense protagonists, unless that defense were so airtight that one could be sure the country was essentially protected, it would not be adequate.

BRENNAN: The optimistic estimates of the results of an ABM defense are based on the assumption that the Soviet offensive force also performs exactly as expected.

WIESNER: If you have a ten per cent failure in a defensive system in a thermonuclear war, you have a catastrophe. A ten per cent failure in the offensive system is not nearly as serious. So if you want to talk about symmetry in the reliability figures for both offensive and defensive performance, the symmetry is not absolute; it is relative and must be adjusted to fit this reality.

HERZFELD: I'm in favor of a thin anti-ballistic-missile defense, the original Sentinel with some important but relatively cheap improvements. The thick defense buys too little for the dollars, but the thin defense does some important things in the prewar stage, whereas no defense that I can think of would do very much in an all-out war with the Soviet Union.

A thin defense does rather well against unsophisticated attacks (in spite of what is said and printed, it is not easy, cheap, or quick for an unsophisticated technology to produce a sophisticated offense), and is extremely helpful in all third-country problems — as time goes on, there are going to be third countries with nuclear capacity other than the Chinese People's Republic.

The system buys very good insurance against accidental attacks and it can provide a firebreak at a very high level of tension, a level even more intense than the Cuban missile crisis. At such a level, if an antagonist who's really not very serious about war wants to blackmail you by firing one, two, or

five demonstration shots, a thin defense robs his threat of reality. A thin defense is like having a very high ante for a poker game; it keeps out the people who are not serious.

The notion of a thin defense did not suddenly come up in 1967. It has been studied since 1962. Sentinel is not a highly speculative system — it is based on much more than "studies," though many studies went into Nike and Sentinel. But there are lots of measurements in the field, thorough, complete measurements that are used to synthesize estimates of what would happen.

WIESNER: It is the general technical consensus that Sentinel is not going to buy us any protection against a Soviet missile attack. I don't believe there is anybody here who would argue that it is. So the question of what the Sentinel could do as far as a U.S. – U.S.S.R. nuclear confrontation is concerned is irrelevant. One might then ask, "Well, why do you care whether or not Sentinel is built?" I care because I think it is regarded by most advocates of anti-ballistic-missile systems as the down payment on a much more substantial system. I have heard high-ranking officers say that if they thought the Sentinel system was all that the United States ever intended to buy, they would be against it. But they believe that it will lead naturally to the large-scale system. Does deployment of a large-scale anti-ballistic-missile system, in fact, add to or detract from national security? My judgment is that in the end we would, at best, be in very little different posture than we are now but with a great deal bigger military system; at worst, we would be in a situation in which the actual damage could be somewhat greater.

JOHNSON: I am not sure we are facing up to the question, which ought to be: Are we satisfied with the strategy of deterrence, of assured destruction both now and for the future? I am convinced that this strategy does not meet our requirements. A capability for mutual destruction of the United States and the U.S.S.R. — a destruction I hope will never take place — is one that leaves us at a distinct disadvantage for our day-to-day operations because of the accident of geography and the fact that we have commitments and alliances around the world. Operating within the framework of the present deterrence, or assured mutual destruction strategy, the United States can be inhibited from taking the actions and using the weapons that might be most effective. This is because the United States does not want to risk escalation to a level that might get out of control.

In the Cuban missile crisis we were fearful of the holocaust, although, really, the Soviets at that time had little capability against us; they could have damaged us seriously at that time, but we could have overwhelmingly killed them.

The Secretary of Defense, in 1965, with the best intelligence available to him, was misled about the Russians' challenge to us in the ICBM race. A year later, the Soviets did indeed begin to build their ICBM forces. What I fear now is that we will be misled about the extent and capacity of Soviet defenses. I am not a scientist so I can neither agree nor disagree with Dr. Wiesner when he assures us that, long before the Russians could deploy an ABM system, we would be able to take adequate countermeasures. He may be wrong, just as the Department of Defense was wrong. If we wait for Russia to start an ABM system, we may not have time to catch up, and then we will be subject to nuclear blackmail.

The Soviets do not need a completely effective ABM system for the improvement of their defenses to have a disastrous effect for us. If the Soviets *believe* they have an adequate system (even though it may be quite inadequate), that may be sufficient to launch them on new adventures. We should make a policy of our own and not accept this standoff that means living under a balance of terror, and we should get on to building our defenses up to a point where we know we can continue the type of life we want for this country.

DYSON: Why haven't the objections against the Sentinel system been raised against MIRV (multiple independently targetable reëntry vehicles), against our Poseidon system, and against our Minuteman III? Poseidon and Minuteman III have properties that make them much more dangerous and escalatory than does the Sentinel system. They vastly increase

the number of warheads targeted on our opponents, who see them as threatening — politically speaking, such offensive systems are much more likely to lead to an intensified arms race.

These systems also lead to a situation where both sides have — or might be feared to have — first-strike capability, one which would provide a sufficient number of warheads to strike at all the opponent's launchers with some prospect of putting them out of action. In that kind of situation, both sides would feel very much more strongly threatened than otherwise.

Nor should we underestimate the danger that the Polaris system as a whole may turn out to be vulnerable if, say, the Soviet Union feels itself to be critically threatened by these four thousand Poseidon warheads on the submarines. The Soviet Union may feel itself driven to take direct action against the Polaris system in peacetime. This is a danger that we all want to avoid.

WIESNER: I raised my voice and fought very hard against MIRV. I tried during last spring to get the Senate to recognize what was involved in both MIRV and Minuteman III. These, too, are foolish investments, and I think that doing the research and development and having the capability to use such weapons — *if* they appeared to be necessary in the event of an effective Soviet deployment of ABMs — would have made a certain amount of sense. But in my opinion both MIRV and Minuteman III were provocative and unnecessary at this stage.

JACOBY: Will ABM escalate the arms race? Will it impede progress toward disarmament? My conclusion is that ABM is as likely to help as it is to hurt. The evidence is ambiguous.

WIESNER: General Johnson and Dr. Jacoby have raised, in different ways, a central question. I think all of us would agree with General Johnson that we do not like to live under a mutual annihilation threat, the balance of terror as he terms it. How do we get out from under? General Johnson assumes that if we work hard enough at defense we can build some kind of electronic barrier, what I have called an electronic Maginot Line. I am convinced that the offense can stay ahead of the defense on either or both sides if the governments elect to do so. Involved here, then, is one's judgment about what nations will choose to do.

My own experience with Defense Department decision-making, which is always under very real pressure from the Congress, is that the political process will always force the decision-makers toward an offense insuring the effectiveness of our own terror. So I do not accept the proposition that escalation of defenses might stabilize the situation. If I thought so, I would buy it.

On the contrary, I believe very strongly that we must try to deëscalate the arms race, that we must try, first to freeze, and then to eliminate offensive nuclear forces to the extent we can. When we had relatively small nuclear forces, with the capability of killing "only" twenty million people on each side, we were probably no worse off than we are today. Perhaps we can work our way back down to that level of destructive capacity.

The real question is whether the deployment of some kind of anti-ballistic-missile system will enhance or detract from our ability to achieve a strategic offensive weapons limitation and possible reduction. One can argue on both sides of this, as we have been doing. If there were some kind of thin defense system in existence, and if it were frozen and there was no prospect that it would be built up into a thick system, it might provide a nice umbrella at some stage in international relations. Once most of the offensive missiles are got rid of, then this thin defense system would be a comfortable thing to have; it would eliminate the threat to our security from clandestine weapons. But I do not believe that in the present context one can start out to build an ABM system and at the same time press ahead to freeze and reduce offensive strategic forces. On the other hand, I think one can undertake a considerable reduction of offensive power of the kind Dr. Jacoby is talking about without any anti-ballistic-missile system at all.

As a strong advocate of mutual arms limitation and disarmament, I have asked myself over and over

again whether there are circumstances under which deployment of an ABM system would help us reach those objectives. I always end up concluding that they do not and cannot exist.

BRENNAN: Dr. Wiesner and I have a fundamental disagreement on what these pressures are that he says are pushing up offensive forces. There are indeed upward pressures and they could be better satisfied, I believe, by letting the defense capacity go up on both sides, thereby reducing the scale of the disaster nuclear war would bring to both parties. These pressures could be turned into a force on behalf of active defense, instead of a force working to increase offensive capacity on both sides which carries with it the literal threat of worldwide destruction. This is the point where we do have a fundamental disagreement.

WHEELER: That is why the argument, then, comes down, basically, to a non-technical and psychological question: what is "A" likely to do if "B" does such-and-so?

ASHMORE: In this connection, I am reminded of a conversation with Secretary McNamara early in 1967 — some months before he yielded in his opposition to ABM. I had just returned from Hanoi, and the purpose of the meeting was to report to the Secretary on the prospects for a negotiated settlement in Vietnam. But it was clear that our difficulties in Southeast Asia, even though they would soon bring down the Administration that he served, had second priority among his concerns.

The world would survive the worst that could happen in Vietnam, he said, but it might not survive the shifting views among the military leaders — on our side, and on that of the Soviets: important people in high places, Mr. McNamara said, were arguing that they could find technical means of using thermonuclear missiles and still survive, and thereby win. He felt this to be the most disastrous concept that could possibly gain currency in the contemporary situation.

This seems to me to be central to this whole debate. If there are some among us, and some on the other side, who believe that some kind of a system can be set up that will make it possible to use thermonuclear missiles and still win a military victory, then I presume, with Secretary McNamara, that the danger point is in fact here.

JACOBY: When it comes to danger points, I think we should recognize that it is the United States that is responding to the communist countries and not the reverse. The two initiatives that have disturbed the nuclear balance were by the Communists — the deployment by the Soviets of a light defense system around Moscow and perhaps around other centers; and the testing by Communist China of a ballistic missile with intercontinental potentialities.

WIESNER: One has to look at what the Soviets deployed, though. We must try to understand it in context. And we must look even further back in matters of this kind. It is true that we are responding to the Chinese development of a nuclear bomb, but it is also true that their development of a nuclear bomb was a response to our development of a nuclear bomb and to our use of it. It was the United States that initiated the development of anti-ballistic-missile systems; we began the first research and development, and we began to talk about what we were doing publicly. I have some reason to believe that our early publications guided the Russians in their initial ABM research and development. What they actually deployed around Moscow, as far as we can tell, is still part of a research and development program rather than a massive ABM system of the kind we are talking about on our side.

McGOVERN: What is the evidence that the Soviets are going beyond this very limited defensive system deployed around Moscow, and their apparent aircraft defenses around Leningrad? Do we have credible evidence that they are moving ahead on a nationwide defensive missile system?

BRENNAN: I think the evidence is both ambiguous and undiscussable.

WIESNER: But mostly negative.

HERZFELD: Their system around Moscow is comparable to a thin defense.

WIESNER: No, it is only a small piece of a thin system.

HERZFELD: It's not all that small.

WIESNER: It is.

BRENNAN: In a fundamental sense the notion of ballistic missile defense is scarcely a radical one. And the cost of ABM is not out of line when one considers what this country has spent over the last eighteen years trying to put up some kind of an air defense against Soviet bombers. In terms of 1968 dollars, the United States investment for the air defense system alone is probably on the order of fifty billion dollars. That does not count replacement cost for parts of the system. Today we're talking about spending about half that much on the investment cost in missile defense.

It is interesting to compare the expected performance of the two systems in terms of what they would buy in the way of insurance. The Soviet bomber threat against which our air defense was deployed probably could never have inflicted more than a few tens of millions of fatalities if we had had no defense at all. (I hate to use phrases like "a few tens of millions of fatalities," but they are relevant.) Today the fatality level from a Soviet ballistic missile attack against an undefended United States would be much, much higher.

The effectiveness of our air defense system during most of these past eighteen years is believed to have been substantially less than the projected effectiveness of the proposed missile defense system. This is partly because we did not have a comparable research and development program for our air defenses; we didn't try to find out in advance the holes in our air defense system before it was deployed. If we had, in the same intensive fashion we have looked for flaws in a missile defense system, the ratio might have been different. As it is, I would say that the fifty billion dollars spent on air defense purchased an awful lot less insurance for our country than it is likely to obtain in the near future with a missile defense system.

BERLE: While, as I have said, I am against ABM deployment because I do not think it will be effective, I do not agree with some critics of ABM who say that economically the country cannot afford it. That is nonsense. The maximum estimate is that ABM would cost fifty billion dollars. The United States can afford that, and more. This year, the gross national product will be about eight hundred and sixty billion dollars and the best estimate for the 1969 G.N.P. is nine hundred and ten billion dollars. We can assume that before ABM would be fully deployed three or four years from now, the G.N.P. would be about a trillion dollars. To detach fifty billion for ABM could be done. It could be done even while we're spending great amounts of money for the social and economic reconstruction of the country. It is true that this would require a political mood of urgency the country does not now have. But, economically, ABM is a manageable proposition.

It does no good to underestimate the economic capacity of the United States. It is far greater than the public realizes. On the economic side, then, there appears to be no good argument against ABM. The real argument against it is that it appears to be waste, as Nike-Zeus would have been in its time.

JACOBY: You raise the matter about the transferability of the resources allocated to an ABM program, but *would* the resources released from the Sentinel system be used to help solve some of our domestic problems — urban blight, transportation, poverty? Another question: if Sentinel should be canceled and later the communist powers do move into a heavy anti-ballistic-missile defense, how seriously would we be handicapped by the time required to remobilize our research, development, and production for an ABM? It seems to me there is a weighty argument in favor of having at all times the resources that can be used quickly to develop a missile defense. I agree with Dr. Berle that the real constraint upon our attack on domestic problems is not lack of economic resources but lack of knowledge and will.

WIESNER: I agree in principle with Dr. Berle. But, as I said before, I was against the research and development appropriations for MIRV and Minuteman III because, among other things, I thought they were a foolish investment. The money was being spent for them at a time when the government, in practice, did not seem able to squeeze enough dollars out of the economy for domestic problems. I felt those military investments were deferrable.

McGOVERN: I couldn't agree with Dr. Berle more. This country can probably afford, in sheer economic terms, an expenditure of the kind needed for ABM. But the political realities are that if we decide to spend major public funds for arms, something else is going to get cut. That is just a political fact of life. In order to fund the Vietnam war this last year, we were told we had to put through a ten per cent tax increase and at the same time cut six billion dollars out of very essential domestic programs. This was a process of weakening our country. We have been denying funds for a good many things we ought to be doing in education, in resource development, in eliminating air and water pollution. Neglecting these problems presents enormous dangers to the security and well-being of the United States. The threats we face are not all military — but you know how the priorities fall out.

If one argues that we can afford both arms and domestic programs, it does not follow that we would not be far better off if we could find a way to get along with the Russians, so that we would not need to spend ninety billion dollars a year on military outlays. The question then becomes one of whether two great countries like the United States and the Soviet Union can even settle their differences in a rational manner while both are armed to the teeth.

RABI: There is no question that we can afford both guns and butter, no question to be put in cold economic statistics. But I am not so sure that economic statistics are a sufficient measurement of what a country can afford. The example of France should give us pause. A year ago France was riding high. She had gold. NATO was a plaything in her hands. She had possessions. She was a going concern. Then her internal troubles developed last spring. Now France is a shambles.

A country is more than its economic capacity or its material possessions. It has a personal, spiritual, psychological side — it is a culture.

Those of us who are teachers and close to young people know the degree to which they have been alienated by all this expenditure on military things. When they see the government putting out tremendous sums of money for military purposes, and then observe the government's reluctance to invest in the solution of domestic human problems, they see a reorientation of our national policy which they believe is turning us into a garrison state. If I have any trust in the American people, I can't believe they will stand for it much longer.

I have to say that I find all these statistical arguments, all this war-gaming, rather obscene. It has nothing to do with the meaning of security on a much more profound level. While we are trying to assure the safety of the country, we may be undermining it.

WIESNER: The question of costs and what a country can afford must also include, I think, the psychoses that may be developed, and may profoundly affect the way political leaders can function. In a sense, the management of our country has had to live in a psychotic state for a number of years, and this has determined its ability to attack serious domestic problems. I know from first-hand experience that both President Eisenhower and President Kennedy were never able to devote sufficient attention to domestic issues. They spent most of their time on external matters, while trying to cope with internal pressures on behalf of various aspects of the arms program.

When I worked in the White House, we felt we were beleaguered on several sides, that we were fighting a three- or four-front war. The Soviet front often seemed the most tractable and least threatening, probably because the Russians were so much farther away than our other antagonists, and the time scale in dealing with the problems they posed was so much greater. I do not think one can overestimate the very adverse effect an unstable arms race situation can have on the ability of the leaders of our nation to give proper attention to urgent domestic problems. The dollar cost of ABM — whether we're talking about twenty billion dollars, or forty billion — is trivial compared to these other costs.

RABI: There is a story that reveals how I feel about all of this. It goes back to 1917, during World War

I, and it involves a great mathematician at the University of Göttingen in Germany. This professor had a call from the rector of the university asking him to appear at his home that evening. He had no hint what it was about. But he thought about it all day and finally came to the conclusion that, since this was a time of great famine in Germany, the rector had probably gone out into the country and somehow or other had got hold of a pig and they would have a feast that evening. This intuition was rëinforced when the professor arrived at the rector's home and found other eminent professors of the university already assembled there. Then, precisely at seven o'clock, the rector strode in and said: "Gentlemen, I called you all together because I have the pleasure of announcing to you the beginning of unrestricted submarine warfare." The professor said later, "At the moment, I felt I was living among madmen and that my only safety lay in imitating them down to the last detail."

I don't go all the way with the professor at Göttingen, but I do feel that his reaction is not entirely inappropriate to the discussion we have been having. This discussion has been going on for the last twenty-three years in exactly the same way: the mathematics of first strike, second strike, force and counterforce; will it be twenty billions or forty billions of dollars, thirty million, or eighty million deaths.

When Mr. Eisenhower was president of Columbia University, he said something that struck me. He had never been interested in defending property, or even lives, he said, as much as he had in defending a way of life. When you look at the proposition inherent in a nuclear exchange, you realize that even minimal losses — such as taking out New York, Chicago, and Los Angeles, and letting everything else stand — would spell the end of the American dream as we know it. And that must be what this whole exercise is all about.

It seems to me that somehow or other we have missed our priorities in the last twenty-three years. We have been using the best technical brains of the country in this general objective of insuring parity in a nuclear exchange without making any comparable effort, or taking any comparable chances, to find an alternative means of dealing with international tensions, problems, and differences.

I submit that in our discussions with the Russians we have never really come to terms with them. At the time the Baruch Plan was put forward after World War II, I think our nation instinctively understood the nature of the problem, and recognized the need to rely on something other than a nuclear exchange to settle East-West differences. As a people, we understood the problem better then than we have understood it since. And the reason may be that we have been listening to the experts who seek to instruct us in the mathematics of nuclear exchange, and in the game theories that leave out all human equations. Of course, if the leaders of the country and the political thinkers can be made to function like machines, then you don't have to talk about the human equation. You just put the problem on a computer, feed your assumptions into it, and there you are! But then, the human equation, all the things that life is really about, are gone.

When Russia invaded Czechoslovakia last summer there was no violent resistance by the Czechs. You might ask whether this was wise or not. In one view, the Czech people were "chicken" for not standing up even though the odds were hopeless. But is the survival of a people and their culture not more important than a "heroic" gesture? There can be two answers to that question, but it seems to me that the real question does lie along those lines. All along I have had the feeling that no one in these times, except perhaps the Russians on one or two occasions, has dared to take chances for the survival of the culture.

HERZFELD: I am quite aware that even to contemplate the kind of calculations one must make in matters of military security causes real and valid revulsion in many people, and not just among the young. I must point out, however, that this revulsion is the kind that any non-medical person feels when he accidentally walks into an operating room while an operation is going on. His reaction is valid, but it does not help him understand the problem of medicine very much.

Personally, I prefer to try to deal in as objective and quantifiable a way as I can with what might be an unlikely — and certainly an undesirable — eventuality: thermonuclear war. Obviously such calculations and numerical attempts at understanding must be done well, and the figures must be used honestly. The fact that some people have not always done this is not an argument against trying to understand, with some precision, what some of these numbers are and what they mean.

It is worth recalling that the naval treaties of the nineteen-twenties and thirties involved serious attempts by serious, thoughtful people to limit, with great precision and in great detail, the kinds of warships different countries could build, the limitations on their size, numbers, armament, and displacement. These agreements certainly had one benefit: they kept many countries from spending an awful lot of money on naval armaments between 1920 and 1940.

WHEELER: A major issue, it seems to me, is that we are entering into a new era with a new kind of policy-forming and legislative process. We've been in the beginning of that era for some time, ever since the atomic bomb. Now it is taking a more virulent form.

Our traditional legislative and policy-forming institutions were founded on the assumption that men of ordinary wisdom have the capacity, and would always have the capacity, to make rational judgments and to engage in deliberative procedures adequate to the solution of all the problems that might conceivably arise concerning the welfare of our country. But it is now obvious, with problems we have been discussing here, that condition no longer exists. The information and the understanding needed to come to a reasoned position on an intense, important public issue, such as the ABM, is held today by a group of people who are not sufficiently involved in the legislative process to insure wise deliberation in the resolution of that issue. We are coming to the point where true legislative processes are occurring in the realm of science policy rather than in the halls of the legislatures. This is a key problem — how to bring matters that involve complex technology and difficult scientific questions into what might be called the realm of the Constitution. How do you constitutionalize science?

One of the real sadnesses here is that while this issue of the ABM is so terribly important, and may indeed shape the outlines of our culture for many years to come, and while there may be intense debate in a very small circle, there is nothing like the spill-out and the resonance on this issue among the people in general that there was in the past at the time of the Teller-Pauling debates on thermonuclear arms, or even with regard to the test-ban treaty.

What we need on this issue is some way of bringing into an institutional framework and into the public arena a counterpart of the Teller-Pauling debates, to devise some way of bringing it into the normal, traditional, popular, and deliberative channels of the country.

McGOVERN: I am very grateful for the public discussion we are having of the issue here. One of the shortcomings in our defense decisions has been that often they have been made by the so-called experts without the light of day focused on them. For a good many years I have been more and more skeptical of the decision-making process under which we commit enormous amounts of public money to highly doubtful military gadgets that add nothing to our security. Even some of the loftiest advisers to our defense establishment have, over the years, demonstrated that they are long on theory and short on common sense, compassion, and a concern for the human interest.

Dr. Rabi made the point well. If we succeed, at long last, in building a theoretically airtight defense structure but, in the process, create the kind of allocation of resources that neglects our most acute domestic problems, we may discover that we have built a shield around a value system no longer worth protecting.

RABI: What Congress can do is to lay down the national objectives. We have been suffering a great deal from not having a clear discussion of national objectives. We lack goals. As I said, Mr. Eisen-

hower's objective was the preservation of the American way of life, our culture. That is No. 1. If this were clearly our goal, it would have an enormous effect on every element of our policy and on the direction in which we are going. Then the search for a balance of terror would not have been the direction we would have taken.

With all respect to the military people, they should not have had the job of setting national objectives, as they very often seem to. After we have a clear understanding and a clear statement of where we want to go, we can discuss with the experts the various ways of achieving that objective on all sides, including the military side.

WHEELER: I agree. The difficulty, of course, in establishing goals is that once the technical and scientific groundwork is set up, the debate occurs within that technical and scientific frame of reference. So if you have goals that do not happen to coincide with the direction and the premises of the technical system, you are not going to be able to do very much in achieving them. There is a kind of technological imperative at work here that makes it very difficult for the deliberative, political representatives to get a toehold into an extremely complex technical situation and to reassert the primacy of goals and the traditional goal-establishing institutions.

McGOVERN: We got into the Vietnam war largely through administrative decisions rather than congressional decisions. Congress failed to exercise its foreign policy responsibilities. It wasn't until about 1965 that we had the beginning of a substantive debate in the Senate about our objectives there. Until that time, decisions about Vietnam were made almost without congressional surveillance. I think the same thing has been happening with reference to the ABM. Only now we are beginning to generate some public discussion of it in the Congress. I don't mean to imply that there is not enormous congressional pressure to move ahead on ABM without careful examination of the matter; it exists, and we all feel it. But I would like to think that our experience in Vietnam has led to an awakening of public opinion, and to a reawakening in the Congress, so that a searching discussion of ABM will now get under way.

HERZFELD: Senator McGovern is correct when he says there has not been much debate in the Congress on ABM if one interprets this to mean debate on the floor of either house. But I have been before at least five different congressional committees to testify about ABM since the early nineteen-sixties. And I have found a remarkable degree of willingness to listen and ability to debate this issue. This is particularly true in the Appropriations Committee.

WIESNER: If you had a secret ballot on ABM, the Senate would vote against it.

HERZFELD: That may be. But I only wanted to point out that a great deal of genuine, informed deliberation goes on in the various committees concerned with defense.

SCHURMANN: Throughout this discussion we have been talking about the possibility of a nuclear war and whether ABM would encourage arms escalation. I think we also ought to consider certain other effects of either ABM or new offensive weaponry like MIRV, effects that may be extremely dangerous because they would create an even more unsettled world situation.

Vietnam may not be the last great international tension we will have to face. In the coming years, even in the coming months, we may be facing in the Middle East another area of extraordinary, explosive tension.

My own feeling is that there was a period, after the Cuban missile crisis, when things were beginning to settle down (with the exception of Vietnam, of course). We did have a partial nuclear test-ban treaty. There was Soviet-American coöperation in Laos. There was a probable indication of Soviet-American coöperation in the Congo. Certainly there was some kind of Soviet-American understanding over Cuba.

There is no doubt that the Soviet Union has the capability (and the will) to abet, create, and foster a whole series of tense situations throughout the world. What I am suggesting is that the creating of

tensions and crisis situations cannot be dissociated from what happens in the nuclear arms race, whether the arms escalation is on the defensive or offensive side. *The New York Times* quoted a remark Premier Kosygin made to Senators Claiborne Pell and Albert Gore on their visit to Moscow. He told the senators that "the relaxation of tension cannot be achieved if one power amasses a great superiority of military strength."

I don't think it makes much sense to try to blame either the Russians or ourselves for the escalation. We have escalated in Vietnam and in our offensive nuclear weapons. They escalated with ICBMs in 1966. Whether one side calls what the other side does "escalation" and what it does itself "counter-escalation" is immaterial. Both sides have contributed to the heating up of the arms race. Escalation of arms leads to escalation in tension and crisis in various parts of the world. The likelihood is not so much that someone will press the button and start a general nuclear war but that there will be a series of small attacks, little wars, whether in the Israeli-Arab world, Cuba again, or wherever. The danger is that these small attacks can, like Vietnam, grow, and then certain people will again seriously consider the use of tactical nuclear weapons. Far more is involved here than simply the cost-effectiveness of ABM, or the differences, errors, and misjudgments that might be found in this scenario or that, and whether or not the numbers used by Secretary McNamara are correct.

My strong feeling is that ABM and MIRV are an arms escalation that will heat up not only the arms race as such but the world situation in general.

BERLE: Conceivably if a crisis were rightly handled one could begin to get some agreement on arms limitation. A Middle East crisis, as you suggest, could come very soon. If it does, I would hope it could be used instead of abused, so that we might try to see if we could not grapple with some of the ghastly realities of our nuclear age. In any such crisis it seems to me that all the arguments about whether twenty million or thirty million lives would be saved by deploying ABM simply loses its validity. You do not have to destroy a man's entire body to destroy him — if you can put a bullet through his brain, that is all you need to do. If the nerve centers of a country are destroyed, it is immaterial whether there are "only" five million rather than eighty million people killed.

One of the reasons I oppose ABM is that I think we are indeed moving into the kind of international crisis situation in which we will not be able to use that defensive system, at least not in time, and in which our objective ought to be to emerge from the crisis with the beginnings of an elementary world law. I might add that it may be precisely because of some of the technical difficulties and weaknesses in a missile defense system that we might reach a point where we could begin to emerge from the balance of terror situation that now exists.

SCHURMANN: A calm discussion of ABM and nuclear weapons of the kind we have been having among ourselves these last two days may not be possible if we have a new, highly intensified crisis situation in the Middle East, one that could threaten to compound the issues. By definition, a crisis situation can go either of two ways. In the early Eisenhower period, it led to peace in Korea. The Cuban missile crisis led to a partial test-ban treaty. We know what the Vietnam decisions early in the Johnson Administration led to. One can point to pre-World War I history and find a series of crises that were successfully resolved. That is not the point Fifteen crises in a row may have been resolved successfully, but then came July, 1914, and that was the end of it.

I am wondering in what ways a direct Soviet-American confrontation in the Middle East, such as we had over the missile crisis in Cuba, could be propelled into constructive directions including, I would imagine, some sort of deëscalating or at least stabilizing adjustment in the offensive and defensive postures of the two superpowers.

BERLE: After the Korean war had been reduced to a cease-fire, Mr. Eisenhower found it expedient to land Marines in Lebanon. Both actions may have proceeded from the same policy, or perhaps instinct.

My own feeling is that when you see that a crisis is imminent you look for the appropriate moment and then you head into it, not out of it. This means you try to call a conference and proceed from that basis. In this case, the objective would be not a resolution only for the moment, but an understanding regarding the whole business of nuclear armament.

That is the *ultima ratio* of kings. A crisis may offer the opportunity to go straight for the main problem that all of us have been discussing here. I don't know whether that is possible, but that is my hope. And if, God forbid, I were making the objectives for the next Administration, that would be my objective.

The Rule of Law

William O. Douglas

Justice William O. Douglas is chairman of the board of directors of the Center.

I am not an expert, but my lay judgment is that the manufacture of the missile defense systems will make the military-industrial complex rich, will result in the production of hugh piles of junk, and will be meaningless in terms of survival. Indeed, our preoccupation with problems of this kind reveals the growing political bankruptcy of this nation. The salvation of the world lies in the pursuit of a rule of law not in the anti-ballistic missile.

Our best brains have concentrated on many false targets in our dealings with the Russians. The Cold War — a bilateral state of mind arranged by Stalin and Truman — produced many such targets. We concluded that Russia's determination to control eastern Europe implied a determination to attack and control western Europe. No credible evidence appeared in the ensuing twenty years to support that conclusion. Yet it was on that assumption that West Germany was rearmed, the Cold War frozen, and a nuclear arms race, now picking up new momentum, was launched.

What Russia did to the Baltic states and later to Hungary and Czechoslovakia was shocking. We assume that our Monroe Doctrine makes morally palatable what we did in the Dominican Republic or Nicaragua. Yet we are reluctant to tolerate such policing of their neighbors by other nations.

The ancient game of balance of power becomes more dangerous as the nuclear age develops. The present balance of power is fired by ideological differences that have overtones as fierce as those which once tore the world asunder between Christianity and Islam.

History shows that as one military power marshals its resources for possible use against the opponent, the latter responds. Preparedness becomes a way of life. It is easy to sell, for it fans the sparks of fear in the hearts of people. And so the race is on.

History demonstrates that preparedness is no deterrent to war. The failure of one nation to keep apace of the enemy may, of course, be disasterous. The stories of Carthage versus Rome and Persia versus Alexander illustrate the risk faced by Israel if she should ever fall behind. That risk often becomes intolerable in the absence of a rule of law under which disputes can be settled. Ernest Cuneo tells the whole story in *Science and History*. The compulsion of nations to balance power only accelerates the acquisition of more power by each side and invariably results in war.

Many think that the pattern has been changed with the advent of nuclear arms because a nuclear holocaust is too appalling to contemplate. But emotions run deep on both sides of the Cold War, and there are issues that so greatly implicate the vital interests of every nation as to make even the risk of extermination not too heavy a price to pay to pre-

serve those interests. We live indeed in a condition of world anarchy where an evangelist of one ideology wages war in Vietnam and the evangelist of an opposed ideology promotes the waging of war in the Middle East. Each is living dangerously in terms of the risks of nuclear war. Apart from that risk, the waging of war under the modern regime of technology is much too expensive for any nation.

Man's choice must lie in other directions if he is to survive. The aim must be the prevention of war. That is to say, the search must be for a regime of the rule of law to settle controversies between nations. We need summit conference after summit conference to discuss specific proposals to inaugurate a rule of law.

Nations, like the men who compose them, are inherently predatory. Conflicts can never be eliminated. That is why the talk of peace that we hear so much about is usually fraudulent. The only talk that is constructive is how to design procedures to handle conflicts between nations. When we look ahead, we can say that those conflicts are as certain to develop as the sun is certain to rise. It is said that agreements of this kind are impossible with Soviet Russia. A student of post-World War II history will find a large degree of intransigence on the part of Russia when it comes to coöperative projects at the world level. Russia's intransigence, however, has been paralleled by our own, as epitomized by John Foster Dulles. These two schools are indeed oppressively similar, resulting, for example, in the refusal of either nation to submit her international quarrels to the International Court of Justice.

There is a frequently repeated statement that coöperation with an imperialistic Soviet Union is not only distasteful to the American voter but also unsafe for the peace of the world. Yet there can be no rule of law without coöperation and there can can be no real security for mankind without a rule of law.

At bottom, both Russia and the United States are realists, and despite ideological differences the two nations have concluded over forty treaties and executive agreements since 1917. Of these, twenty-five are still in force today. Put together in one mosaic, they do not form a regime of law governing all disputes between the two countries, but each of them does contain threads dealing with specific concrete issues that lead toward one design. If we are not to become politically bankrupt in managing the crises of the nuclear age, Russia and the United States must hammer out a consensus on procedures that will peacefully resolve the conflicts not only between the great powers but between the lesser ones as well. The list is long, and the selection cannot be made unilaterally. How can we reach a consensus on an agenda for the solution of potential conflicts?

☐ Can we put aside as non-negotiable the placement of Russian missiles in Cuba or the settlement of crises between Russia and the countries of eastern Europe through American intervention?

☐ Can access to West Berlin be put into the justiciable category subject to adjudication by a defined tribunal?

☐ Border and boundary problems have always loomed large. Territorial questions mixed with border problems have plagued Israel. Can the United States and Russia agree on their resolution under a regime of law?

☐ The problems of the territorial seas create numerous friction points, as illustrated by the Pueblo incident and, earlier, by the Gulf of Aqaba episode. Can such conflicts between little nations, or between great powers, or between a great power and a lesser power be channeled into legal tribunals?

No one knows the answers. I suggest, however, that the search be launched in summit meeting after summit meeting. This search will not be complete until the means of getting rid of nuclear weapons altogether becomes an inextricable part of the movement for organized peace.

The problem is beset with tremendous difficulties because every country is plagued with the idea of protecting its own sovereignty. This idea carries all the ingredients of a rabble-rousing slogan, but reason tells us that only by each nation giving up a bit of sovereignty can all move forward. It took the surrender of a considerable slice of sovereignty to achieve the Postal Union, but it is this which makes it possible to send letters to some hundred

and thirty nations and to receive letters from the people in those nations. It was the convention on civil aviation that made possible an efficient network of air routes over some ninety nations around the globe. So it goes from treaty to treaty. One can often get by surrender of a bit of sovereignty more than he surrenders.

What people can get in terms of a rule of law would contribute more to their security than what they have stockpiled in the form of nuclear weapons. Yet even treaties to confine the use of nuclear power are suspect. We hear silly reasons for the failure to confirm the nuclear non-proliferation treaty with Russia. Some suggest it should be postponed because somehow or other it is an endorsement of communism. Some think a delay is necessary until we solve the problem of the electromagnetic pulse given off by a nuclear explosion and its impact upon our system of internal communications. Yet subjecting nuclear power to the rule of law is a necessary step toward survival. Not that the nuclear non-proliferation treaty by itself will work magic. But, like the hot line between the White House and the Kremlin, it is one of the building blocks necessary for the structure known as the rule of law.

The old preoccupations with ideas of national power and supremacy are more than antiquated. Today they conflict directly with human welfare and human survival. The test that is now relevant for Russians and Americans alike is not how many megatons of obliterative force can be accumulated but whether the species now confronted with the stark prospect of obliteration can find common ground for survival.

The only known alternative to the rule of force is the rule of law, and the search for this, not the missile race, is what should be preoccupying us. Lawyers and jurists across the globe can make the rule of law a fresh reality once the politicians begin to listen.

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