

ALTERNATIVE APPROACHES TO ARMAMENT AND DISARMAMENT

by

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(Introduction by Georges Charpak  
and  
General Georges Buis)

## Introduction

I am General Georges Buis; I am a General of the reserve staff. I should first thank the reverend Father Minister Francois Pays, who is the chief of this center where we are meeting and who was good enough to lend us this hall. I thank him cordially.

Taking the floor for a minute longer, I express the wish that I can avoid the traditional presentations of conference chairman, because I do not pretend to be able to do justice to the subject matter which is going to be well articulated in this presentation.

First, I consider it a great honor to preside at this meeting and to present Dr. Richard Garwin. It is also an honor for our forum to have convinced him to be among us this evening. Dr. Garwin will be presented by Dr. Georges Charpak of CERN. It is he who initiated the visit of Dr. Garwin. I also congratulate you then, ladies and gentlemen, for having the good idea of being here this evening to hear Richard Garwin and have the opportunity to discuss with him. We are fortunate to have this chance for mental stimulation, rare because Dr. Garwin does not often come to Paris.

In a moment, in a talk which Dr. Garwin will shorten in order to allow for a longer discussion, he will introduce the question of alternatives in the arms race.

But now, who is this Richard Garwin? All of you know his name but you may not know about the many brilliant facets of this great man.

At present, Dr. Garwin keeps himself busy with many positions. He is a specialist in matters of defense, and is a physicist at the IBM Research Center in Yorktown Heights, USA. He is an Honorary Professor of Physics at Columbia University.

Dr. Garwin made fundamental discoveries in elementary particle physics in the late 1950s. He began to work, at a very young age, in 1950, at Los Alamos. He participated in military studies, in the following period, dedicating three to five months each year to this. He developed many diagnostic methods utilized for assessing the energy of nuclear explosions. He carried out the first studies of fratricide effects, that is, the destructive interaction between nuclear explosions in close proximity. More simply, that means that if an aggressor hopes to destroy a certain silo which contains a missile, it is necessary to use three nuclear weapons, of so many kilotons or so many megatons. The fratricide effect forbids sending the three warheads at the same time; the aggressor risks that the first to go off may impede the functioning of the second or third, and so he has to echelon the arrival of these nuclear weapons. This permits missiles in the silos which have not been destroyed by the first wave to be launched under fire, that is, to be fired if it has not been destroyed by the first missile, before the arrival of the second or third.

Finally, and this is the claim to fame which has made his name known to all of us, Dr. Garwin contributed to the realization of the first generations of hydrogen bombs. He worked also on nuclear delivery systems; on the vectors of these weapons; and he also worked on the utilization of permissive action links-- the system which prevents the unauthorized use of such nuclear weapons; on systems of deployment of strategic arms; on arms in space; on arms control; and on limitations of testing.

He served for eight years as a member of the President's Science Advisory Committee, under Presidents Kennedy, Johnson, and Nixon. He served for three years as a member of the Defense Science Board, advisory to the Secretary of Defense. He has participated actively in discussions with the Soviets on the limitation of strategic arms, both in an official capacity and in an unofficial role, in the meetings of the so-called Pugwash movement.

His independent stance on many subjects has often put him in opposition to powerful groups on many issues.

His competence, I say, indeed, his enormous competence, has made him a much sought after and respected witness before committees of the United States Congress. Thus he won the arguments

at the time of President Carter in the debates opposing the B-1 bomber as a replacement for the B-52, and the deployment mode of the new ICBM, known as the MX.

Today, faced with new developments in the arms race, his proposals for massive nuclear arms reductions, reduction by a factor of 25, based on due regard for the necessary conditions for mutual security of the protagonists, deserve your special interest at a time when propaganda arguments do not accept his reasoning-- and this justifies the title "Alternative Approaches to Armament and Disarmament," which he has chosen for his talk tonight.

But before having him speak, I call on Georges Charpak, whose friendship with Richard Garwin allows him to say some words of a more personal nature about him.

Georges Charpak: I want to add a more personal note, but since the essentials have been said, and you have not come to hear me, I will be brief. I simply want to place Richard Garwin among physicists. At the age of 19, he entered the laboratory of Enrico Fermi. At 22, while in the midst of conducting fundamental research in physics, he worked part time at Los Alamos, and there immediately made an essential contribution to the first hydrogen bomb. As Edward Teller told us, Dr. Garwin invented the first test based on the principles of the hydrogen bomb. He worked at the same time on fundamental science and on military applications. When he came to see us at CERN during a sabbatical year, he had made some very considerable discoveries in the field of muon physics, experiments which remain in the history of physics, but he was so secretive that not one of us knew that he worked on military applications as well.

In itself, that makes him an unusual kind of physicist, but what astonished us was that he had enormous experience in fields that had nothing to do with our profession, whether it be electronics, or mechanics, and we wondered how he could have been familiar with mechanics. Presumably he was not born knowing mechanics. Yet somehow he was experienced at it.

Finally, he went to IBM, where he continued a very diversified career in physics-- (about military applications we knew nothing then)-- in fields of physics which had nothing to do with particle physics, which bore witness to the fact that he dominated the diverse domains of physics.

As for military applications, he continues to have considerable achievements in that area, but I must say that in the other fields of physics, it is still a pleasure when one has something new, to go to see him about it. This afternoon, we went together to the Ecole de Physique et Chimie to pay a visit to a student with whom I was working. Immediately Garwin took off his jacket to work, which tells you that he is not an ivory tower physicist.

As for me, I tell you that, like very many physicists and certain politicians, I feel a certain unease, when I hear certain claims regarding strategic arms. One is given the impression that there are truths which one cannot challenge. The fact that one hears them placed in doubt by someone whose technical competence cannot be contested, appears essential to me. I am very hopeful that the presentation made here, this first contact, will become the basis of a more prolonged contact with military circles and political circles-- for those who would wish to hear the different facets of the truth. Because I don't see how at the present time one can pretend that one knows which is the right path when one sees that the natural development is leading to an absolutely absurd spiral which produces a degree of security which is less than it was ten years ago. Thus, from this viewpoint-- the fact that Richard Garwin has the boldness to come up with some proposals and that he is heard by certain American political leaders, who appeal to him when they have problems-- it seems to me that it would be of great value if we would profit from the fact that he is available here for a certain time, if he could come into contact with responsible people here, and this is in a way the goal of the action of those who convened this meeting.

But I have spoken too much. I will let Richard Garwin speak. He understands French but does not speak it well, and will therefore use the help of an interpreter.

Richard L. Garwin (RLG): Thank you General Buis and Georges. I apologize once for my English; this way I can say exactly what I want, and it will be translated for you without mar.

It's a pleasure to be able to talk with people in Paris with such interest on the topic "Alternative Approaches to Armament and Disarmament." My goal, like yours (I expect), is improved security at lower risk.

I will begin by stating my views on matters of very current interest, then discuss those of more fundamental and enduring importance, and close with specific recommendations (primarily for the United States and the Soviet Union). Then I will be very glad to answer questions or to await expressions of views (either in accord or contrary) from the audience. But throughout all this we ought to remember that a single weapon of 1 megaton yield exploded on a city will kill immediately half a million people and that there are 10,000 strategic weapons in the U.S. arsenal, and a similar number on the Soviet side.

First, with regard to President Reagan's March 23 so-called "Star Wars" speech of this year, calling on scientists and engineers who gave us nuclear weapons to turn their great talents to providing defenses which would "render nuclear weapons impotent and obsolete." This appeal was reinforced on March 27 by the Secretary of Defense, Caspar Weinberger, who explained that the President was not talking about "any kind of partial defense," but about a total defense against nuclear weapons of all kinds. I have participated in technical studies of this problem for many years, including this year, and my own view is that there is no prospect of success in nullifying the capabilities of the Soviet Union to destroy U.S. society by nuclear weapons.

Within the last month this view was reinforced by a responsible official of the U.S. government (who wished to be anonymous) who told me that there is not a single person in the government familiar with this program who thinks it will succeed.

The key problem is not that we fall short by a factor million or 1000 million of the brightness of lasers required to kill missiles in their boost phase (while their rocket motors are still burning).

A major problem is the fact that the Soviet Union will not lie down and play dead. They will react, and they will modify their strategic offensive force to counter the offensive system-- to bypass the offensive system. That very great supporter of defense, Edward Teller, says that it is not possible to use space-based systems in such a defense because, as he says, they are very costly to launch into orbit and very cheap to shoot down.

Teller also goes on to say that it makes no sense to deploy a defensive system if it can be overcome at lesser cost by modification of the offensive system.

I can go into details in response to questions as to exactly how one counters these systems as I have done in my Congressional testimony of November 10, 1983. One way, for instance, is to place in orbit space mines (small satellites which carry explosives) next to the defensive satellites.

Another general-purpose countermeasure to such a defensive system is to modify the offensive missiles over the years so that they complete their burn in 40 seconds instead of 150 seconds or 400 seconds. This totally counters thoughts of using neutral particle beams or x-ray lasers because the atmosphere which remains above the missile shields these missiles while they are still in boost phase.

Another item of current interest is the so-called "nuclear winter". If one exchanges the 10,000 megatons of explosive yield which are in the strategic inventories, or even 5000 megatons of that total yield, the new effect which has just been recognized in the last year or so is the production of large amounts of soot (not smoke, not dust, but soot) from the combustion of forests, of fuel supplies, and of plastics in cities.

The calculations which have been done by Carl Sagan, Turco and others, and also at the Livermore Laboratory of the United States Department of Energy, indicate that this soot will block the sunlight in the northern hemisphere for a period of months (perhaps 1 month, perhaps 6 months). At noon it will be quite dark; no plant will continue to grow, and it will be very cold-- a fall in temperature in the interior of the continents of perhaps 30 degrees in the summertime, bringing the temperature below freezing, and thereby giving rise to the name "nuclear winter".

These calculations will be refined in the next year. They may even be in error, but they indicate that the problem of nuclear war may be more severe than was previously thought even for those who do not participate directly. So instead of estimates of perhaps 1000 million people killed in nuclear war, there might be 3000-4000 million people.

I say this only to be complete because I think that people in the United States, or in the Soviet Union, or in France, should behave no differently in trying to avert nuclear war, than if only we were to die and not neutrals and non-participants; but substantial damage is likely to extend well beyond the countries that are involved.

Now I want to comment on the negotiations for the control of the intermediate-range nuclear forces, which were broken off by the Soviet Union within the last month. It seems to me that this is a totally optional, modern, classic tragedy, which arose as follows:

The Soviet Union began to modernize its own nuclear forces of intermediate range. They had previously about 700 nuclear-armed surface-to-surface missiles deployed first in the late 1950s (named SS-4 and SS-5). These were deployed in the European part of the Soviet Union, and (like the rest of us) became 20 years older by the end of the 1970s.

They were therefore candidates for replacement by a more modern missile, the SS-20, of which you all have heard. In 1977, Helmut Schmidt, in a notorious speech, said that something must be done to compensate this modernization. And I believe that he was willing to accept in compensation an augmentation of the submarine-based nuclear armed missiles. But one way or another (probably with U.S. demands playing a part) it was decided to base on land in NATO, 108 Pershing-II missiles and 464 nuclear-armed ground-launched cruise missiles (the so-called GLCM). These incorporated new technologies of guidance and propulsion. This decision was made in the famous NATO dual-track decision of 1979, in my opinion, to increase the acceptability to the public of NATO deployments.

The Soviet Union was not happy with the deployment of new arms on the Western side and, (us on; never reluctant to cause trouble in the NATO alliance) they did what they could to oppose that deployment. In the negotiations, the Soviet Union apparently was adamant about admitting only zero new nuclear forces in NATO, and the U.S. was adamant about having some intermediate-range nuclear forces, unless the SS-20 was likewise reduced to zero. So the Soviets walked out, and we are now faced with the SS-20 deployment resuming, and the West deploying their 572 new nuclear warheads, and the Soviet Union deploying new nuclear weapons to compensate elsewhere in the world to threaten the United States itself.

This is typical of the arms race of the past. In principle it does not increase the danger; there are just more nuclear weapons managed by the same people. However, it is totally unnecessary and it keeps us from thinking about ways to solve our problems. Instead, we increase the problems to some extent. The Soviet Union could have averted this by indicating in the beginning that they were modernizing their force, but that they would deploy fewer warheads than they would remove.

NATO and the United States could also have avoided a further round in the escalation. There is plenty of blame for both sides.

Now I want to talk about a topic in which there is still some hope, namely anti-satellite activities and the linkage of anti-satellite (ASAT) with other space weapons.

Right now there are no weapons in space, and if we manage things right, there need never be any in space. On the other hand, if we do things wrong the arms race in space can lead to war in peacetime (unlike the arms race in intermediate-range nuclear forces).

From about the mid-1960s until the early 1970s, the United States had two operational nuclear-armed anti-satellite systems, presumably to dissuade the Soviets from developing and using anti-satellite weapons. These U.S. systems were dismantled in 1975.

The United States and the Soviet Union have a substantial military dependence upon satellites, and they use satellites for military purposes (but for non-weapon-carrying purposes).

Since 1968 the Soviet Union has tested about 20 times a non-nuclear anti-satellite interceptor, first with radar and then with an infrared or optical homing sensor, but with very poor results. The United States has estimated that the Soviet ASAT has had a "very limited operational capability" since 1978.

The United States and the Soviet Union began talks to limit anti-satellite weapons in 1978, but these were broken off in 1979 because of the Soviet invasion of Afghanistan.

Now for the hopeful part. In 1981 the Soviet Union presented to the United Nations General Assembly a treaty banning anti-satellite weapons, and this did not bring any response from the United States. But in May of 1983, I and two others presented to a committee of the Congress our own response-- a draft treaty-- which so far as we could see, satisfied American needs in banning anti-satellite activities and weapons in space.

In August, 1983, the Soviet Union presented to the United Nations a draft treaty which was a major improvement over their 1981 version, and in fact, contained all the advances which we had put forward in our May, 1983 version, (except for one clause which denies any military-related activity to the space shuttle, or to any manned spacecraft). The Soviet 1983 draft is a very satisfactory basis for negotiation.

However, anti-satellite treaties are totally incompatible with the presence of ballistic missile defense in space.

One cannot ban ASAT capability if Star Wars proceeds. Worse, since these space defenses are vulnerable, they cannot survive if the other side is free to launch space mines or arbitrary payloads on their rockets in peacetime.

So the United States would have to proclaim to the Soviet Union that they could no longer launch anything into space without our approval; or if the Soviet Union wished to deploy a space defense, they would have to tell the United States that we could no longer launch satellites without Soviet approval. In my opinion, either constraint would lead to war in peacetime, and that war would not be confined to space.

The ban on nuclear weapons tests in the atmosphere in space and in the oceans was negotiated by Admiral by Averil Harriman in 13 days in Moscow, and was signed in 1963 between the United States and the Soviet Union (and then by many other countries, not including France). I think that is what we need now in regard to a ban on anti-satellite capabilities and on weapons in space.

Now to the more general question of nuclear weapons. Since 1945, the United States has had many possible roles for its nuclear weapons: Initially, a massive retaliation against whatever action the Soviet Union might have taken; then to deterrence where the United States nuclear weapons would be used if the Soviet Union used nuclear weapons against us or our allies; then to another posture of damage limitation.

What has always been possible, and what remains possible, is to deter destruction of the United States or its close allies. This might be called "assured survival by a capability for assured destruction of the other side," and I regard this as entirely credible.

What is more important, I have every reason to think that the Soviet Union believes that this is credible and is deterred from attack so long as the will, the capability, and the doctrine are maintained.

Great damage is caused by those who publicly cast doubt on such a posture for purposes of persuading the Congress to provide funds for other weapons; or the Soviet Union itself may impair its security by casting doubt on the concept of assured destruction.

In his March 23, 1983, Star Wars speech, President Reagan, in order to motivate the idea of total defense, asked: "Would it not be better to save lives rather than to avenge them?"

He then said that the capability for assured destruction had guaranteed nuclear peace for 38 years, and would continue to do so. Nevertheless, by his speech, he cast doubt upon the assured nature of deterrence by assured retaliation.

Others ask whether it would not be better to be red than dead; and some say the opposite-- it's better to be dead than red.

Children sometimes ask one another whether they would prefer to be eaten by lions or by rats, but is not necessary to accept either.

Simple deterrence, sufficiency, minimal deterrence, means that a nation need be neither red by conquest nor dead.

Beyond that, there is the call of Paul Nitze in the 1970s, (or so-called "high-quality deterrence") and before that in 1962, former Secretary McNamara asked for "damage limitation" by the use of U.S. nuclear weapons. Those assign tasks to nuclear weapons which they cannot really fulfill and call into question the effectiveness of nuclear weapons for the task that they can perform.

Their purposes were different. In 1979 Mr. Nitze argued against the ratification of the SALT-II treaty, supposedly on the basis that SALT II would codify a Soviet advantage in the capability to destroy silos in a short time-- so-called time-urgent hard-target kill capability.

Mr. Nitze totally ignored the possibility of improving the accuracy of existing U.S. weapons during the period of SALT II; under those circumstances the United States, not the Soviet Union, could have had a vast superiority in this same category.

And Mr. McNamara, in 1960, argued for a damage-limiting role for nuclear weapons simply because he had purchased more nuclear weapons than he could use for deterrence-- that is, for assured destruction.

McNamara was entirely correct, logically. The United States would be far better off in time of war if it used some of those nuclear weapons to destroy weapons on the Soviet side rather than to destroy cities in the Soviet Union which no longer existed because they had already been destroyed.

That is only a sampling of where we have been in the past and the arguments that have been used-- which appear logical, but are not relevant or compelling. And now I want to give you an interim, very conservative goal which will reduce risk, reduce cost, and provide time for looking into the future at more radical solutions to the nuclear problem.

= The first goal is to recognize the maximal utility of nuclear weapons in destroying the value of society, of industry, and of a nation's conventional military forces which have not yet been deployed on the battlefield.

In any case, that would be a recommendation to reduce the present 20,000 nuclear weapons in the Soviet Union or in the United States to about 1000 nuclear weapons on each side.

= A second goal is to preserve and reinforce the ABM treaty of 1972, which bans the deployment of defenses against ballistic missiles on either side.

= We should ratify the comprehensive test ban treaty so that there would be no more nuclear explosions, even underground.

= And we should have a total ban on anti-satellite testing, and on space weapons.

= A final goal for this interim regime would be to have a serious effort against the proliferation of nuclear weapons to additional countries, and this would be a regime of strong sanctions in the case of proliferation, and of guarantees of security in case a country did not acquire nuclear weapons.

It is very easy to set forth goals like this. I think one could agree that these goals don't violate any laws of physics, but it is not so easy to see how we get there. First, there is no instability, on the way to these goals-- unlike on the path to total defense.

This posture recognizes the enormous effectiveness of nuclear weapons, and the effectiveness of "launch on warning" if one side or the other became totally vulnerable in its strategic forces to the weapons of the other side.

I suggest that if one replaced hoping and wishing by a cold evaluation of options and paid attention to reality and achievability, there would be a lot more support for these very conservative goals than for the ones of total disarmament or of total defense.

Now I want to leave some of the rest of my prepared ideas as answers to questions which will be asked, and go on to just a few words about non-nuclear weapons.

Nuclear weapons take only a small part of the United States defense budget, but it is very important that they not get out of control, and that they fulfill the jobs assigned to them.

Conventional weapons take much more money, and they too have the possibility of getting us into nuclear war. We don't do a very good job with conventional weapons and probably that is because of the very large bureaucracy which has grown up in peacetime for the development and management of such weapons.

Tremendous new technological capabilities have been demonstrated in conventional weapons, but our weapons do not now have the effectiveness that a proper choice of those technologies could bring.

I can't do better here than to quote from General David C. Jones in an article in the November 7, 1982 New York Times Magazine section titled "What's Wrong With Our Defense Establishment."

General Jones had retired just one year earlier as Chairman of the Joint Chiefs of Staff of the U.S. Armed Forces.

He said that the United States Defense Department had evolved into a group of small elements which developed weapons to fill small bureaucratic niches rather than using modern technology to solve the overall problems of defense.

And as you heard in the introduction, the B-1 bomber and the nuclear-armed air-launched cruise missiles were bureaucratic antagonists. It was extremely difficult to get the U.S. military to adopt the air-launched cruise missile, even though it has a vastly greater potential for penetrating anti-aircraft systems during wartime.

So there is almost no chance at present with the present organization of the armed forces to replace large numbers of manned aircraft by conventionally-armed cruise missiles, and to replace aircraft carriers by cargo ships carrying conventionally-armed cruise missiles (even though that is probably the way to go). It is essentially impossible with the present organization of the U.S. armed forces to replace manned aircraft by conventionally-armed cruise missiles.

And even less is it possible to replace aircraft carriers by ships carrying conventionally-armed cruise missiles.

So, I close by reminding you that there are goals which are desirable, which should be achievable, but for which we do not have the proper organizational structure, nor probably the public education required for their achievement.

These problems were created by people; they can be solved by people; and that's why I'm here talking, and why you are here listening, and we are about to discuss these matters further.

Thank you.

## QUESTIONS and ANSWERS

Male voice: Question in French.

RLG: The reduction of weapons by a larger amount does not have to be simultaneous. I think that the United States, for instance, could put half its nuclear weapons into a reserve from which they could be recalled in a period of months. The rest of the weapons would be given the job of assured destruction in case of need; and if the Soviets followed suit by disabling half of their weapons, then we could proceed further.

Even in the past when it was generally recognized that the United States had far more weapons than were needed for the tasks assigned, this was never admitted because new weapons, new budgets, were always desired, and I'm sure the same was so in the Soviet Union.

But I think we have had long enough experience that both the United States and the Soviet Union realize they would be happier with fewer weapons on the other side. It is not a zero-sum game, where our gain is the other side's loss. We both lose when we both deploy more weapons.

As for confidence-building measures, there can be no better confidence-building measure than a reduction of arms and a strict adherence to the provisions of treaties which have been ratified and should be obeyed.

Voice: Question in French.

RLG: Ex-President Carter, in October 1982, on a television program in the United States, said that he had made a special study of Soviet compliance with the nuclear arms limitation treaties, and he volunteered that the Soviets had obeyed these treaties strictly.

There is one problem with a Soviet ABM radar which has been reported in the newspapers (near the town of Abalakova) and if that radar is completed and put into operation, it will be, in my opinion, in violation of the ABM treaty. So, the Soviet Union should look carefully at what they are doing in that regard. Is there another question?

Male voice: Question in French.

RLG: The ABM treaty limits defense against strategic ballistic missiles, and not against tactical ballistic missiles. Fortunately, this particular radar (which in my opinion will be in violation) is looking northeast from central Siberia, so is not a matter of defense against tactical ballistic missiles.

Heureusement, that is, for reasons of definition; malheureusement, because it strikes at the heart of the ABM treaty itself.

Male voice: Question in French.

RLG: In this regard (Soviet ASAT tests) I can only quote official statements of the United States government, but I don't disagree; and they are that the first, oh, 10 years of tests were reasonably successful (with perhaps a 70% success rate), and in recent years there has not been a single success of this interceptor. So the definition of "success" is defined by the U.S. Government, but it is not just a miss by 1 km.

For reasons of secrecy, I cannot speak further on that point.

Male voice: Question in French.

RLG: I will respond first. The question is: "Do I mean by 'reinforcing the ABM treaty' that we should build more ABM systems?"

And specifically, "should the United States counter the Soviet ABM system around Moscow-- the Galosh system-- by building one of its own around a U.S. city?" Thank you very much for the question.

The ABM treaty of 1972, as modified in 1974, allows each party to have one ABM site.

The Soviets have chosen to defend their capital, Moscow, and the United States chose to defend a set of missile silos in the central north of the United States at Grand Forks, North Dakota.

Both sides are in compliance with the ABM treaty. The United States has chosen to turn off its ABM system; the Soviets continue to operate theirs.

The result of the Soviet ABM is that in case of nuclear war, Moscow will receive many more nuclear explosions than if it had no ABM system.

The counter to the Soviet ABM system around Moscow is not a U.S. ABM system around some U.S. city. It is a re-targeting of the U.S. strategic offensive missile force. So, my recommendation to reinforce the ABM treaty means to eliminate ballistic missile defense entirely or to limit it in special ways to silos only-- so that we can reduce the number of warheads in the strategic offensive force.

My primary recommendation is not to have a space defense against ballistic missiles and not to characterize the ABM treaty as disadvantageous, but to cheer, to support the ABM treaty in our statements.

Voice: Question in French.

RLG: No, I don't think one can properly distinguish between kinds of nuclear weapons, but only where they explode.

Every weapon is a strategic weapon if it is delivered against the homeland.

And that is exactly the problem with so-called peaceful uses of nuclear explosives-- or with battlefield nuclear explosives-- because they are used for very inappropriate purposes with very little value.

I didn't have time to say it, but I propose that if the U.S. has 1000 nuclear warheads, not one of them should be based on land outside the United States. There should be a mixture of submarine-based nuclear weapons and a strategic offensive force of silo-based nuclear weapons on small single-warhead ICBMs.

Some of the nuclear weapons should be based on aircraft in the United States in the form of air-launched cruise missiles, but on small aircraft carrying only a few cruise missiles each.

Female voice: Long question in French.

RLG: I think that the Reagan Administration came to office ignorant of most of the facts, as have many administrations in the United States in the past.

For instance, you remember that the Kennedy Administration achieved office on a charge of a "missile gap", fostered by the previous Republican administration, and they were wrong.

The Reagan Administration, unfortunately, has not marshalled all the American expertise it could, either within the government or beyond the government; and so it has remained, in my opinion, ignorant for a longer time. This wounds me particularly deeply because I am a Republican.

In fact, the policy of the Administration has little to do with the capability of the Administration; but you might also ask "what is a leader for, if not to enunciate a direction so that the people can follow?"

My answer is that a leader should not propose policies and directions which are impossible or hazardous to follow, and that the staff work should be done which provides a sound basis for such policies.

As for your second question, I think if there is to be a warning shot (a warning nuclear explosion) launched by the United States, it has to take place in the Soviet Union.

Under those circumstances, it will make no difference to the Soviet Union whether that weapon was launched from Europe or from the United States, and it will make no difference to the response of the United States, either.

Voice: Question in French.

Classical arms are important because there will always be conflicting aims, and there may even be armed conflict; so it is better to settle those matters as quickly and at as small an investment (as small a potential loss) as possible.

But one arrives at rather complicated matters to discuss here-- massing of arms in combat as quickly as possible, classical supremacy, Lanchester's Law.

As for your third question, many of the supporters of the candidate Reagan in 1980, and he himself, characterized essentially all arms control treaties as bad for U.S. security. He characterized the SALT-II treaty as "fatally flawed". Nevertheless, this Administration is obeying the SALT-II treaty so long as the Soviet Union similarly obeys it.

As for Colin Gray, (whom I know quite well, and I have read most of his writings), he is much listened to by the Reagan Administration in matters of strategy and policy. In my opinion, he is simply wrong and irresponsible in advocating major changes in the way in which we conduct ourselves with arms control treaties and arms without any demonstration that our security will be improved or not terribly injured. I particularly refer to his views about space weapons and anti-satellite treaties.

Voice: Question in French.

RLG: Well, these recommendations have no chance at all if they are not made.

Voice: Question in French.

RLG: But there are many who feel similarly. For instance, former Secretary of Defense McNamara in December 1982 listed eighteen ways to reduce the chances of nuclear war.

And McGeorge Bundy, national security adviser to Presidents Kennedy and Johnson, had recommendations in a speech one month ago in San Francisco.

We differ primarily in details; they espouse a no-first-use of nuclear weapons policy, and I do not go quite so far.

But I think there is a lot more attention to the necessity of changing policy and capability as regards nuclear weapons. And I think something may happen within the next couple of years.

As for implications for NATO, I would like to see more attention to reality and less to exaggerated threats.

I don't think that the security of NATO would be reduced by relying on central U.S. strategic forces, primarily based in silos and submarines and on aircraft in the United States.

We should talk more about the 300,000 U.S. soldiers who are present in the NATO countries as a means of coupling the security of the United States with that of NATO, and talk less about the necessity to build more weapons for no military purpose.

Voice: Comments in French.

Yes, thank you. Well, I myself have worked with the U.N. special sessions on disarmament. I helped contribute to the volume of the second special session on nuclear weapons.

But the action is really with the national governments, and not with the United Nations.

In the United States, public opinion probably has as big an influence on the government as in any other country because of the strong role played by our Congress in the details of the national security program.

It is very difficult for the citizenry to devise a program itself.

But it is not so hard to form an opinion as to what is consistent with a program for improving international security and what is affecting it adversely.

My advice (in the United States, at least, and in all other countries in which this is applicable) is to learn to say "no".

That is, not to say "no" to all defense nor to all weapons, but to those which do not fit a reasonable structure for national security.

So in the United States that means "no" to the MX missile; it means "no" to the B-1 bomber; it means "no" to a lot of other things which are just like the alcoholic's "last drink."

This is not to say that weapons are bad in themselves; but to spend money on weapons that are useless and might cause undesirable responses on the other side, does not improve the national security; it impairs it.

And with enough "no" said in that way, then those responsible may provide options for weapons which could be useful and stabilizing, even if the other side produced them.

Thank you for your patience and your questions.

Response and Concluding Remarks  
by  
General Buis

Dear Richard Garwin,

Thank you for having given us so much of your time, and while surveying this vast panorama of weapons, costs, and political repercussions which is required by a serious approach to "defense," for not having ignored some invaluable specifics.

You have emphasized these specifics, in your own words, by a strong "no" said to certain weapons which would cause us (we Europeans) to dream, but which are superfluous to the American superpower. As for me, unfortunately I cannot add my "non" to the MX or to the B-1, but more modestly to the combat tanks which France obstinately continues to build, although she has opted for nuclear deterrence to defend her territory, and which, besides, can nowhere in the world anymore (faced with surface-to-surface or air-surface missiles) could be the tool for breaking through a front (and which front?). I have to add also "non" to the self-propelled 155-mm artillery, costing a fortune, which are only the evolution of the famous 155 of the 1914-18 war, and with which one equips a French army which has no longer the mission of fighting (and winning) the traditional battle against an advancing enemy. I give these minor examples in order to emphasize that one finds these same problems of mal-adaptation-- due to the perfectionism and self-justification of the occupants of the various offices-- from top to bottom along the scale of arms.

I thank you for having emphasized throughout your talk the relative nature of the ratio of forces. It is true, I believe, that for the midterm-- that is to say until the year 2000-- either of the two superpowers can be certain (even in the worst case and with the worst luck) to be able to destroy the other. That fact ought to dominate our thinking in the matter of proposals to modify strategy relying on a breakthrough in weapons technology, particularly since the strategy would have to evolve simultaneously in both two powers.

I believe also that claims according to which the Soviets do not believe in nuclear deterrence-- supposedly based on the fact that they don't have a word in their language to translate exactly "deterrence" (is this an argument or a macabre farce?)-- is really a cheap trick of logic.

The Soviet leaders certainly know perfectly well what is "Mutual Assured Destruction," and consequently take it much more seriously than a very hypothetical Assured Survival. A large-caliber revolver pointed at his chest discourages a robber much more certainly than the most sophisticated door on a safe.

Reciprocally, the one who holds the revolver feels a lot more secure than if he would simply be protected by a door. In saying this, I am thinking of the campaign which is mounted in favor of civil defense-- the construction of shelters, the dispersion or evacuation of urban populations. Where would we put the 10,000 locomotives necessary to pull the trains which would be needed to evacuate the citizens of Paris in an hour (I think big) if it were necessary? As for the canny Swiss, who we are told build perfect shelters, what would face them on emerging, even at the end of several weeks? Death, delayed, undoubtedly, but very much tougher than if it had come in a nanosecond.

We are grateful to you for informing us that in the month of May 1983, you and two of your colleagues presented to the United States Congress, responding to a Soviet proposal for banning anti-satellite weapons, a draft treaty toward the same end, taken up, in large part, by a further Soviet proposal in 1983.

I think that we must never tire in the fight to banish space war or war in space. A lot of people think that war in space would be a way to shift the ground from war on earth, (to slough, as in the game of Bridge) but it is in fact, emphatically quite the opposite.

All this, and a lot of other important matters, you have told us with that serene authority that radiates from you, and with all of the weight of your personal qualities which are known throughout the world. I thank you, in my own name and in that of those individuals who have listened to you and

among whom are counted the most important, in my own country, in the field of strategy and defense. If I can make a wish, it is that you would be willing to come again to visit us in Paris, under conditions where we will have the time to make better preparations than we have been able to do today. You have in France, a receptive public. It is waiting for you.

Thank you again.