

Nuclear war by 1999?

Five experts think it likely.

What would be its cause? Who would fight it? What would it lead to?

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A prophesying clock face in the editorial offices of the Bulletin of the Atomic Scientists has symbolized for the past 28 years the threat of nuclear doomsday. The hour hand has never been far from twelve. The minute hand has advanced and retreated with the movement of international power politics and the editors' assessment of the degree of danger the world was facing. Today, believing the threat of nuclear war to be more pressing than ever before, the editors have moved the minute hand on their clock forward to nine minutes before midnight. They declare: "It behooves us as people of all nations... to remember, above all, that time is running out."

Are the prophets of doom mistaken? Five experts at a recent Cambridge Forum panel discussion addressed themselves to that question; what follows is an edited transcription of their remarks. The participants, all faculty members of the Harvard-M.I.T. Arms Control Seminar, were Paul Doty, Richard Garwin, George Kistiakowsky, George Rathjens, and Thomas Schelling, moderator.

Although these men by no means agree on every matter relating to the future of nuclear war, and while some are more optimistic than others, they share the belief that the clock at the Bulletin of the Atomic Scientists is keeping reliable time.

Their key points:

—Nuclear war in some form is likely before the end of this century.

—It will probably occur as the direct result of a proliferation of nuclear powers and weaponry. The more people who have such weapons, the more probable their use.

—Existing political systems and the policies they generate fail to provide curbs on, or alternatives to, the proliferation of nuclear weapons. Nations continue to increase their armories in the name of self-protection.

—To survive in such a world, nations may have to surrender much of their sovereignty. But a new kind of world government would involve the abandonment of many democratic values. Nuclear war is a more likely prospect.

—People are complacent about the threat of nuclear

war. We have different fears. The horror of the first atomic-bomb explosions is fading from our memories.

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Schelling: Getting through the last 25 years without nuclear war gives me only very modest confidence that luck or skill will get us through the next. I even wonder to what extent events up to 1999 will depend upon the United States, which had so dominant a role in the preceding quarter-century.

We must ask ourselves what the next 25 years are going to demand for an acceptable resolution of the question "Nuclear war by 1999?" I am first going to ask Paul Doty to reflect on the history of warfare in this century and the possibilities of nuclear warfare in the future.

Doty: Of course, none of the five of us can answer this question with certainty. At best, we can enumerate our views of the prospects of nuclear war within the next 25 years, while trying not to let our own native optimism or pessimism color those estimations too much.

The prognostic limits are not very broad, and such expertise as there is was widely discredited thirteen years ago by the overstatements of C. P. Snow, who declared with great precision that nuclear war within ten years was a statistical fact. Let that caution us against attempting statements of such certitude.

What we face now is a range of possibilities and kinds of nuclear engagements that did not exist in the past. Aside from a possible superpower war or NATO-War-saw Pact war, there is the chance that smaller nuclear powers may engage either the Soviet Union or the United States. Or they may fight among themselves. Nuclear-armed guerrilla warfare is certainly possible, and we must also imagine what roles nuclear weapons might play in a civil war within a nuclear-armed country. We are not at a loss for formal possibilities.

On the other hand, nuclear war, because of the spectrum of weapon strengths, is not necessarily coincident with Armageddon—although we might wish to express it that way as a threat.

The most often-mentioned start to nuclear war is through escalation of a conventional war. Any theories about possible nuclear attacks should begin with a few

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words about the relation of conventional war to nuclear weapons. One cannot help but be impressed by the enormous differences in warfare within the last sixty years, particularly in its casualties. The thirty-year period from 1915 to 1945, just prior to the nuclear age, saw the greatest carnage in war that was ever experienced. The deaths due to battles, excluding civil wars, numbered about thirty million. This is between a third and a half of all the people ever killed in battle in recorded history.

Since then, about three million combatants have died in warfare. Taking into consideration that the population has doubled, one can calculate that a citizen living in these last thirty years had only 7 percent the chance of being killed in warfare that the citizen had living in the previous thirty years. Those facts can be interpreted in many ways, but one must allow at least for the possibility that the threat of nuclear war and the consequent rearrangements in international politics has brought about, at least for the time being, a remarkable suppression of conventional fighting. It is a fact that the occurrence and intensity of conventional war has been greatly reduced recently. And we can hope that the very threat of Armageddon—whatever the causes and effects—will lead to the further suppression and consequent reduction of possibilities that might, through escalation, lead from any conventional war to nuclear war.

Each of us has his own suggestions for diminishing the potential of future nuclear war, while recognizing that the possible origins of nuclear war are increasing. And, due to the activities encompassed by the rubric SALT, we are indeed conscious of growing governmental efforts to control strategic nuclear weapons, although our opinions regarding the effectiveness of these efforts are varied. No one knows exactly what standards one should use for comparison. But, most important, we must recognize the fact that the two superpowers each possess nuclear weaponry in great excess of the amount required for each to deter a first strike from the other—a few hundred weapons, by most standards. That each side has accumulated many thousands of such weapons implies a dedication to the concept of using the threat of war and the image conveyed by those numbers of weapons as chips to gain diplomatic advantage. To support this image, both sides maintain a very large research-and-development and production effort that modernizes and improves the existing forces. Not until we recog-

nize these tendencies and the prestige attached to nuclear weapons can we make an inroad in arms control and reduction that is truly meaningful.

Perhaps only by exhibiting some restraint can the two superpowers transmit the message to others that the alleged advantage of their excessive nuclear build-up is not as tempting as it was before, and that one's international machismo does not need to be measured by ownership of an excessively large number of nuclear weapons. Given my experience over the last several years, I am afraid that it may well be another 25 before this addiction to unnecessary nuclear weaponry is banished and we can



Paul Doty, Mallinckrodt Professor of Biochemistry at Harvard, is currently serving as the university's director of the Program for Science in International Affairs. This project was recently granted more than \$1 million by the Ford Foundation to initiate studies in arms control and disarmament.

Doty has been involved in science policy and arms control for decades, and since 1963 he has served as chairman of the American Academy of Arts and Sciences Committee on International Studies on Arms Control. His Washington assignments have included membership on the President's Science Advisory Committee (1961-64) and consultant to the Arms Control and Disarmament Agency. At a planning session for this forum, he focused the discussion to follow by designing on the spot a precise outline of eleven classes of nuclear wars theoretically possible by 1999.

face more realistically what is needed to maintain a minimum deterrent.

Let me emphasize that there seems to be a changing pattern of global power relations. We seem to be experiencing an almost inevitable drift toward less world order and less use of international institutions such as the United Nations, which, despite our many criticisms of it in a number of crises, has repeatedly demonstrated its usefulness in dealing with international disputes. As banal as it may sound, a commitment to strengthen this institution is one of our best hopes for the future.

That brings us to the matter of the public's attitudes toward the likelihood of nuclear war. Examining the news media one finds, in the past, two peaks of very marked public concern—almost hysteria—around 1953 and around 1963. Newsweek in 1963 took a poll to discover what most frightened people. Of primary importance were things related to nuclear war.

A recent Fortune poll of business executives tested their attitudes about nuclear war. About 8 percent thought there would be nuclear weapons used at a low level in war some time in the next twenty years. About 0.4 percent thought there would be a substantial nuclear exchange. We have now a period of relative public confidence that nuclear war is not imminent.

This complacency can itself be a danger. As time increasingly separates us from the use of nuclear weapons in war and the subsequent testing of nuclear weapons in the atmosphere, we are apt to lose the vision of how absolutely catastrophic nuclear war is. But that vision is something that must not escape us.

Schelling: Dick Garwin, how would a nuclear war start and what are your suggestions for preventing it?

Garwin: There are many possible causes of nuclear war other than the often mentioned escalation from conventional fighting or a disarming first strike. One could have accidental war, in which one superpower could inadvertently launch one of a whole stockpile of weapons against some other power. The Atomic Energy Commission once had total control of our weapons, but long ago they were ceded to the Department of Defense. The basing of many on foreign territory, under our nominal control, increases the chance of unauthorized use of nuclear weapons, by either U.S. personnel or by others.

Catalytic war is a second possibility—a power possessing a small number of nuclear weapons and a great hate for the



Richard Garwin, for the 1974 fall semester at Harvard a visiting professor of applied physics and research associate in the same program as Doty, has been affiliated with the IBM Corporation since 1952, where he has served in a variety of offices including that of director of applied research. He was a member of the President's Science Advisory Committee from 1962 to 1965 and from 1969 to 1972. His work for the government has included studies on antisubmarine warfare, new technologies in health care, sensor systems, military and civil aircraft, and satellite and strategic systems—in an effort to improve U.S. systems as well as to assess their existing capabilities.

two largest powers could, in its own interest, provoke war between them.

In 1945 the United States alone had a few nuclear weapons, which were very closely guarded and much thought about by those in control. Now the United States, the Soviet Union, the United Kingdom, France, China, and India own nuclear weapons. There are tens of thousands of nuclear weapons in the world instead of just a few, and many of these have an explosive power of twenty megatons instead of twenty kilotons—capable of destroying an area one hundred times larger than the original nuclear weapons. The use of all the nuclear weapons on all sides would destroy the United States and at least half its population and be the same for the Soviet Union and its population. But the worldwide effects are completely unknown and are just beginning to be considered.

Furthermore, we have far less control

over most of these weapons than we had over the first few, although we do, at least, have some technical controls for our own. About twelve years ago we first introduced permissive-action links (combination locks) on many nuclear weapons, especially those located on foreign soil. Their purpose was to make physical possession of the weapons not synonymous with the ability to detonate them. Over the years we have continued to improve our guardianship over such weapons and our capability of pre-emptively destroying them and of prescribing penalties for their unauthorized movement or attempted use. These technical skills, we devoutly hope, will be used by all nations having nuclear weapons.

As usual, however, we have been overconcentrating on a few dangers and ignoring the many others that will be the ones to bite us ultimately.

How, for example, would the United States respond to nuclear violence? We have never really practiced the channels of decision. The President, being a busy man, is far more familiar with other things than with the procedures for releasing nuclear weapons or the likely effects of such actions.

Schelling: George Kistiakowsky, if the human race should get to 1999 without any form of nuclear war, to what happy events, skillful diplomacy, self-restraint, or possibly undeserved plain luck should that be attributed?

Kistiakowsky: I am not an optimist. Perhaps we could be plain lucky—we could survive by pure accident, contrary to the designs of most statesmen. Or perhaps some very far-reaching social upheavals, whose nature I cannot anticipate, will occur, changing the world in a way that would drastically alter the present trend of events. Yet I estimate that the probability of a nuclear war occurring in any twelve-month period ahead is actually increasing.

As Doty mentioned, public opinion seems to be rather cheerful about our condition, but I submit that the public has been exposed for several years to very effective Madison Avenue-like techniques concerning U.S. foreign policy. We have a succession of "break-throughs toward peace," "toward a generation of peace." That kind of propaganda, of course, lulls people into a sensation of false safety. In reality, the arms race goes merrily on, is even accelerating. I can only describe the latest SALT agreement at Vladivostok as one that protects the arms race for the next ten years from interference by the arms controllers. However, I do not think that the next nuclear war, contrary

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to possibilities fifteen to twenty years ago, will begin as an all-out attack by NATO on the Warsaw Pact countries or vice versa. What is most frightening about this arms race is that we are setting an example for the rest of the world about the importance of having nuclear weapons—of having, as Eisenhower said at the end of his official life, this fantastic power of the “military-industrial complex.” We now see one country after another following in our steps: France, China, now India, and perhaps Israel. The Shah of Iran has said that he will “have” to have nuclear weapons by and by. South Africa has pointed out that it too will “need” a supply.

There are no cases in history of absolutely insane arms races ending peacefully by simply laying down arms. Arms races usually end up in wars. As the military acquires more and more weapons, it will acquire more and more power, and the military tends to resolve conflict by military means. Here, I am not talking of nuclear weapons alone. Let us bear in mind that in the last year the United States has sold or given away nearly \$10-billion worth of non-nuclear arms to Third World countries. The figure for the Soviet Union is not very far below.

If the armament race continues, what will be the outcome? I think that a major nuclear war, in which the loss of life would be at least comparable to that of World War II, is not unlikely. Unless something totally unpredictable or unforeseeable happens (such as a non-nuclear revolt of the have-nots against the haves in the world), the chance of a nuclear war is quite substantial. I would say nuclear war is not as likely as another conventional war between Israel and the Arabs, but I think its likelihood is greater than that of one nuclear-power reactor blowing up violently enough to result in thousands of casualties. Somewhere between those extremes is the probability of nuclear war.

Schelling: If the unhappy answer to our question is yes, nuclear war by 1999, what sort of war would it be? What would be its cause? Who would fight it? What would it lead to? What would be the aftermath of even a small nuclear war in which merely a few hundred or thousand or million people were killed? What would it be like to be a survivor of the first nuclear war in a world where the next question was, “How soon the second?”

Rathjens: Whatever the number of nuclear powers within the next ten years, the number will be greater by the end of the century.



George B. Kistiakowsky, an internationally esteemed Harvard chemist, was born in Russia. In 1944 he became the chief of the Explosives Division at the Los Alamos Laboratory of the Manhattan Project, where he designed the implosion mechanism for the atomic bomb. During 1957 to 1964 he was one of the original members of the President's Science Advisory Committee. While serving as the committee's chairman from 1959 to 1961, he was special assistant to President Eisenhower for science and technology. In 1968 he severed all connections with the Department of Defense.

Nuclear materials will be available in enormous quantities. Each large reactor is now producing enough material to build a weapon a week, and predictions are that by the end of the century there will be several thousand reactors around the world.

I would guess that if there is to be nuclear war, it will begin with one of the emerging nuclear powers, where command and control systems may not be as refined, or the government as stable, as ours. The French government is an example. The Chinese recently underwent a cultural revolution. I shudder to think of Uganda's General Amin having nuclear weapons in his control, and yet we will face such situations in the next 25 years.

To extend Schelling's question somewhat, one could ask, “How many nuclear wars by the end of this century?” An answer must depend on how the world would react to that first nuclear war. My guess is that the first one will be relatively limited, begun by a country with a fairly

small population using nuclear weapons probably against its neighbors. Although I disagree with him, Robert L. Heilbroner in *An Inquiry into the Human Prospect* proposes another possibility: that one of the developing (or nondeveloping) countries will act against us—those countries that are being so short-changed in the use of the world's resources.

How do we react? We have no way of predicting whether nuclear wars will become commonplace after one occurs or whether a first nuclear war will bring about a world reaction that may lead to major changes in political structure.

In any case, I do think that a first nuclear war is probable and that it will involve large numbers of fatalities—tens or hundreds of thousands, perhaps millions, but not billions, although the kind of war that we and the Soviet Union could enter into could involve, certainly by the end of the century, fatalities on the order of at least a billion.

What are the critical factors leading us toward a nuclear war? One is our great preoccupation with the Soviet-American arms competition. In all of our discussions of arms, in the rationalizations of our military posture, and in the kinds of negotiations we enter into, we all but neglect the fact that nuclear proliferation is probable. As we build these enormous weapon stockpiles and as we increase the emphasis on the use of nuclear weapons for political and actual fighting purposes, we are at the same time setting a terrible example for the rest of the world and are giving the non-nuclear powers every incentive to acquire these weapons on their own.

We face a particularly critical issue next year when the Nuclear Nonproliferation Treaty comes up for review. I believe all concerned with nonproliferation are very pessimistic about being able to hold the line on it. It would take an enormous surrender of sovereignty to bring nuclear proliferation under control, and I see very little likelihood of that happening. If it does not, my guess is that the Israelis and Arabs, Indians and Pakistanis, or two African countries will eventually use nuclear weapons against each other. If we are lucky, we will not be drawn in immediately. Perhaps our best hope is that we will learn a lesson from the first major disaster so that our complacency will not lead us to many more such wars before the century is over.

Schelling: Given Rathjens's estimate of at least a thousand reactors producing enough material for 50,000 bombs by the end of the century, what is now being

done or what can be done to prevent the nuclear-weapons industry from getting out of control? I think that nothing is being done—or even being contemplated—to cope with the problem.

Garwin: The reason we don't concentrate on solutions to the nuclear-armament problem is that we have such strong forces anxious to protect our freedoms in the defense and military areas that we cannot get up any steam to initiate true arms control.

The budget of the Arms Control and Disarmament Agency is less than 1/10,000 of the Defense Department's. For every dollar that goes into that agency, \$10,000 are going into the Pentagon. This discrepancy is reflected to some extent in the relative political clout of these two bureaucracies. Yet long-lived strategic-weapon systems, such as the B-1 or the *Trident*, which are developed

to last beyond 1999, mortgage a large part of the defense budget and preclude rational thought because they are really inadequate for the functions ascribed to them.

Improved security for this country rests first in improved defense management—so that the nominal civilian leaders of the Defense Department are required to provide for the Administration, the Congress, and the people thorough analyses of what we need and what we can afford. Equipped with true analyses and not just the propaganda stemming from them, we would be able to consider the requirements for arms control. We would be able to take the political initiatives necessary to persuade other countries (because of liabilities) not to acquire nuclear weapons, but rather to depend on a single nuclear country, a consortium of nuclear countries, or on a world nuclear force to prevent nuclear weapons from being used against them. But first, we must remove the contradictions in the defense budget and defense programs.

Schelling: If there were a one hundred-fold increase in the Arms Control and Disarmament Agency budget, how would you spend the money?

Garwin: I would analyze the kinds of military forces required by the United States—doing what the Defense Department is not doing. And I would outline a program for preventing nuclear-arms proliferation.

Doty: To outline such a program seems an impossible assignment, but, perhaps with a less grandiose set of priorities, a great variety of suggestions might pour out—some of which could be quite successful. For example, there is no single person in the Arms Control Agency, or in the whole government, working on radical arms-control and disarmament schemes.

Schelling: Do you see proper funding of proper research as a solution to the problem that George Rathjens described—the proliferation of nuclear capability in smaller countries with less experience and less control?

Doty: If such a study were seriously funded, the problem would be seriously studied. That would also open for public scrutiny a range of possibilities that are not discussed now simply because there is no apparent governmental interest in them. For example, to be visionary, we could imagine bringing here to the U.S. foreign nationals in positions of military or political responsibility for teaching and training under the auspices of the Arms Control and Disarmament Agency



George Rathjens has been since 1968 professor of political science at the Massachusetts Institute of Technology. Trained as a natural scientist, he holds degrees in chemistry from Yale University and the University of California. He has served in various governmental positions concerning U.S. policy on arms and defense. He has been a staff member in the office of the special assistant to the President for science and technology, chief scientist and deputy director of the Advanced Research Project Agency for the Department of Defense, special assistant to the director of the U.S. Arms Control and Disarmament Agency, and director of the Systems Evaluation Division of the Institute for Defense Analysis.

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in just as great numbers as people are brought for training in weaponry. Such a program would create an atmosphere of awareness of our common future and an attitude toward improving it that would be a counteraction to what is going on now. It is unfair to say that our inability to generate a range of activities means that those activities would be fruitless if they were actually undertaken. I have a great deal of faith in the ingenuity of well-funded research.

Schelling: Let me ask our pessimist, George Kistiakowsky, whether, if we had what Garwin and Doty have wished for, he would cease to be a pessimist.

Kistiakowsky: No, I wouldn't. I think they are daydreaming. The course of events cannot be changed by giving a little more money to A.C.D.A. and doing some clever research. What really must be changed radically are the socio-economic conditions in the world. The world is heading into great shortages of commodities like food, because the more nations try to increase their standards of living, the more the consumption of resources increases, and these resources are all finite. I think it quite likely that long before the end of this century very powerful forces will act on nations to surrender significant portions of their accustomed absolute sovereignty in order to survive. This reordering of the world is naturally the more optimistic possibility.

On the pessimistic side, there is the possibility of a really horrendous war between the nations—a real scramble of all to survive and devil may care about the others.

The more optimistic possibility—some surrender of national sovereignty—might bring about the realization that expenditures of \$250 billion annually on arms can no longer be afforded. Then gradual disarmament might take place.

Schelling: Dick Garwin wants money, and Paul Doty wants more attention to drastic revision of the whole armament scheme. You want a surrender of sovereignty. By whom? And what is the prize for that surrender? What magic is produced by a willingness to give up important sovereignty?

Kistiakowsky: Recognition, I think, that some kind of international mechanism has to be introduced to allocate the world's resources.

Schelling: Does that mean we divide the world, its land, its industrial resources, its income, among everybody? Do sovereign nations cease to be countries? Do we cease to be a well-to-do country in a world that for the most part is poor?

Kistiakowsky: We may be forced to that extreme, to some extent.

Schelling: Is there any reason to suppose that if the world were a single country, it could avoid internecine nuclear warfare? Is a single country in the world able to handle its conflicts or its nuclear weapons any better than can 135 countries?

Kistiakowsky: You are going too far. I am not talking about a single, worldwide nation, but about many nations remaining separate entities yet achieving the far greater degree of cooperation that is necessary for joint survival. Such a concept will probably have to start not with mechanisms of disarmament as we know them, but with other sorts of actions. What they will be, I don't know.

Schelling: But you are enough of an optimist to believe that alternative mechanisms do exist?

Kistiakowsky: No. I am a complete pessimist about disarmament, but I maintain a forlorn hope that something else will happen to save the world from nuclear holocaust.

Rathjens: It is hard to top George Kistiakowsky's pessimism, but I think I can do it. It does seem to me that when we discovered fission and decided to exploit it, we may have made inevitable a radical change in our whole mode of existence. A possible long-term solution may well require a radical change in our whole life style, meaning the surrender of most democratic values and the addition of rather brutal methods to keep the nuclear threat under control.

Although one could imagine a condominium approach, in which the Soviet Union and the United States joined in an attempt to rule the world, I don't think it would work. A very nasty kind of world government may be necessary if we are to survive in the world that I see ahead. Such a harsh government is a very grim prospect, and it's not likely. Nuclear war is more conceivable.

Garwin: I am just as pessimistic, even though I think there may be some measures we can take that do not require surrendering a significant amount of sovereignty. For instance, a country could prevent production of nuclear weapons in nonmilitary reactors if it indeed wanted to commit itself to not making nuclear weapons. That solution would involve increasing the cost of electrical power by perhaps 1/10 of a cent per kilowatt-hour, to be spent on safeguards for the fuel cycle, which might include incorporating highly radioactive material in the initial reactor fuel.

However, if a country wants to main-



Thomas Schelling, Lucius Littauer Professor of Political Economy at Harvard, is widely known as an arms strategist, particularly as one who adapted game theory to such practical questions as arms control, disarmament, and conflict resolution. He was instrumental in organizing the Harvard-M.I.T. Arms Control Seminar, which has been meeting since the early 1960s and which once included Henry Kissinger. Schelling has been a consultant to the Departments of State and Defense and to the Arms Control and Disarmament Agency, as well as to several national-security research organizations. It was during a discussion of the prospect for arms control at a Cambridge Forum in December 1970 that he announced he had severed all professional relations with the Department of Defense.

tain its option for making nuclear weapons, there is no way that I can see to prevent it. There is no way to eliminate from the human race the knowledge of how to produce such weapons. Once the knowledge had been disseminated, we were never further than a few weeks from the potential manufacture of nuclear arms.

Moreover, proliferation can occur most simply by the sale of nuclear arms, just as we sell modern conventional arms. I do not think the United States would do this, but other countries might, and make a lot of money from it.

Schelling: Although, by temperament, I may be an optimist, a reasoned evaluation of where we may be in 25 years suggests that we will not be able to regulate nuclear weapons around the world in 1999 any better than we can control the Saturday-night special, heroin, or pornography today. I have no confidence that any government—be it a world government, democratic government, or dictatorial government—will be able to cope with the problems of nuclear weapons any better than they can cope with

the usual criminal problems in society. And it is very frightening to realize that by 1999 a device with the power to blow up a community the size of Cambridge, for example, could probably be carried on the back of any strong person.

Considering that nations are unable to govern their affairs in a civilized fashion, to hold down their aspirations and yield up their sovereignty, and to sacrifice their values in the interest of their own peace and the peace of the world, we will be coping with something that might well be not any international conflict, but the worldwide equivalent of banditry, hijacking, and bank robbing. Where people are now putting conventional bombs, in bank vaults and airport lockers, by 1999 they will be able to sequester nuclear bombs. I imagine that getting hold of a bomb will not be difficult. With the "nominal" control of an increasing number of nuclear weapons to which Dick Garwin referred, there is indeed the possibility of theft.

Our obsession with the Soviet-American confrontation, the Soviet-American arms race, and the importance of Soviet-

American armament may have kept us from recognizing that, after this last quarter-century, one of the most inescapable issues is no longer how the two most technologically advanced, centrally controlled, disciplined countries, with the most at stake, can get along, but how to cope with a problem that is spreading throughout the world like an epidemic disease.

As George Rathjens said, we have a nonproliferation treaty coming up for reconsideration. In some ways that treaty reflects our government's dilemma. To gain support for the treaty, one has to exaggerate its importance. It is embarrassing to ask publicly, "Once we have the treaty, how do we prevent the spread and use of nuclear weapons?" To propose that the problem will remain despite a treaty undermines the enthusiasm and political support for the treaty. The U.S. government has been pretending in public that the nonproliferation treaty is more of a cure for the disease than it actually is.

The United States and the Soviet Union, among other countries, pushed so hard for the nonproliferation treaty that we all began to feel that the treaty is something we want. We pushed so hard that now such a treaty appears to many to preserve a kind of imperialist conspiracy on the part of a few major nuclear powers. Thus it seems that now the right thing for the smaller nations to do must be to oppose it. We are in a bad moral position. We spend billions on weapons and suggest that smaller powers should participate with us in making the world safe for countries like us. They may be quite unwilling to listen when we tell them that they are as much at risk as we. We must begin to acknowledge that this problem exists, and we must become less obsessed with bilateral confrontation—such a beautiful excuse for spending money. We have to be prepared to give up much that we hold dear—including, possibly, many democratic values—in an attempt to make the world safe, even if it is not our kind of world.

I used to think that one of the most horrendous facts I had ever heard was the number of American nuclear weapons stationed on foreign soil. But, confronted with the number of weapons that could be made per week by 1999 from the fissionable products of nonmilitary nuclear reactors, I am beginning to believe that proliferation (like billions of mosquitoes hatching out of billions of eggs) means infection, and is a concern to be dealt with like matters of public health.

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