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STUDY PAPER NO. 18

NATIONAL SECURITY AND THE AMERICAN
ECONOMY IN THE 1960's

BY

HENRY ROWEN

MATERIALS PREPARED IN CONNECTION WITH THE
STUDY OF EMPLOYMENT, GROWTH, AND
PRICE LEVELS

FOR CONSIDERATION BY THE

JOINT ECONOMIC COMMITTEE
CONGRESS OF THE UNITED STATES



JANUARY 30, 1960



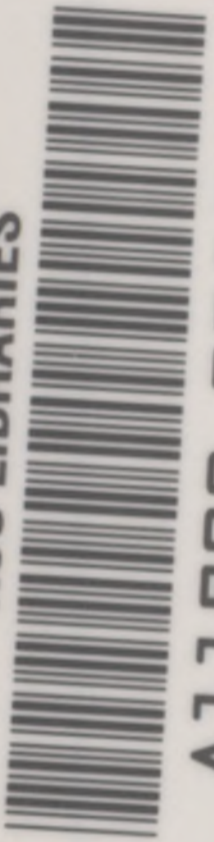
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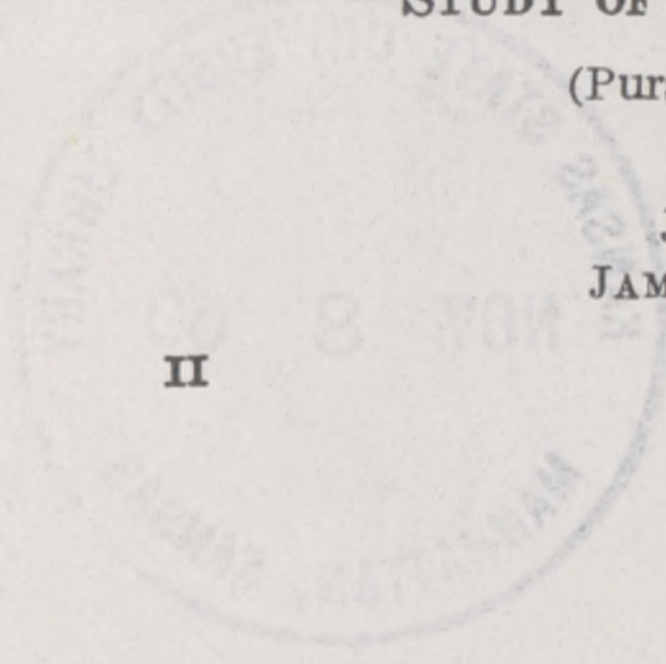
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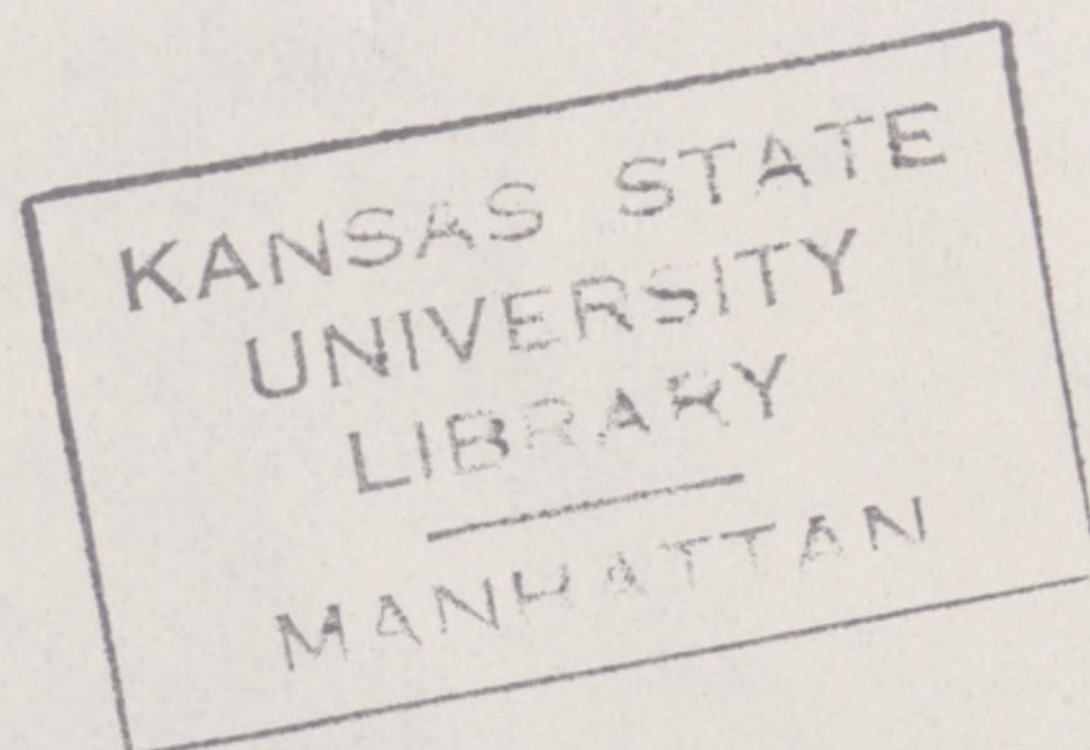
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LETTERS OF TRANSMITTAL

JANUARY 18, 1960.

To Members of the Joint Economic Committee:

Submitted herewith for the consideration of the members of the Joint Economic Committee and others is study paper No. 18, "National Security and the American Economy in the 1960's."

This is among the number of subjects which the Joint Economic Committee requested individual scholars to examine and report on in connection with the committee's study of "Employment, Growth, and Price Levels."

The findings are entirely those of the authors, and the committee and the committee staff indicate neither approval nor disapproval by this publication.

PAUL H. DOUGLAS,
Chairman, Joint Economic Committee.

JANUARY 12, 1960.

Hon. PAUL H. DOUGLAS,
*Chairman, Joint Economic Committee,
U.S. Senate, Washington, D.C.*

DEAR SENATOR DOUGLAS: Transmitted herewith is one of the series of papers prepared for the study of "Employment, Growth, and Price Levels" by outside consultants and members of the staff. The author of this paper is Henry Rowen.

All papers are presented as prepared by the authors.

OTTO ECKSTEIN,
*Technical Director,
Study of Employment, Growth, and Price Levels.*



LISTINGS OF PUBLICATIONS

1. *Journal of Economic Literature*, Vol. 1, No. 1, 1963. This issue contains the following articles: [illegible text]

2. *Journal of Economic Literature*, Vol. 1, No. 2, 1963. This issue contains the following articles: [illegible text]

3. *Journal of Economic Literature*, Vol. 1, No. 3, 1963. This issue contains the following articles: [illegible text]

4. *Journal of Economic Literature*, Vol. 1, No. 4, 1963. This issue contains the following articles: [illegible text]

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STUDY PAPER NO. 18

NATIONAL SECURITY AND THE AMERICAN
ECONOMY IN THE 1960's¹

SUMMARY

A significant proportion of U.S. economic resources are devoted to national security. At the present time, we allocate to this crucial national objective over one-half of all Federal expenditures and just under 10 percent of our gross national product. In return for these expenditures we do not receive security in any absolute sense, for that goal is clearly unattainable in the nuclear age. On the contrary, our defense objectives are multiple, they interact and partially conflict, they exist in an environment of great strategic, technological, and political uncertainty. The object of this paper is to describe these objectives, the relations among them, the alternative policies we might choose in their support, the risks and sacrifices they might entail, and the range of possible defense expenditures we might experience in the 1960's.

By now it is well understood that the role of the economy in war has been drastically changed by the advent of nuclear weapons. No longer can the United States base its military strength almost entirely on mobilization potential for war. Mobilization after nuclear attack can be ruled out; the task of survival would be dominant. However, there are many respects in which our economic strength for war remains of central importance, and our ability to increase our military force in response to aggression abroad or the threat of all-out war remains a vital source of strength. Our large economy makes it possible for us to support our Military Establishment with a much smaller proportion of our total output than in the Soviet Union whose considerably smaller economy supports a military establishment comparable to ours. This enables us to greatly expand our defense effort if we choose.

During the decade of the 1960's, however, the Soviet and Chinese economies will be growing rapidly; and so will their capacity for supporting arms and for waging war. The gross national product of the Soviet Union, now one-quarter to one-half as large as ours, will be one-third to two-thirds the size of ours by 1970. This growth will permit a large increase in defense spending while also permitting a large increase in consumption standards. This is not to say that such

¹ I wish to acknowledge my indebtedness for many helpful suggestions and for criticism to the following: Abraham Becker, Lewis Bohn, Bernard Brodie, Harvey DeWeerd, Daniel Ellsberg, Alain Enthoven, Charles Hitch, Frederick Hoffman, Fred Ikle, Herman Kahn, William Kaufmann, Andrew Marshall, Roland McKean, Richard Moorsteen, and Sidney Winter.

Many of the ideas and arguments in this paper are due to Albert Wohlstetter who is preparing a book on arms in the nuclear age for the Council on Foreign Relations. I am especially indebted for the discussion of limiting damage in a general nuclear war to be found in part I A; the discussion of the mutual suicide view and, especially, the critique of the minimum deterrence position; and the elaboration of the deterrence-plus-insurance view, both in part I C.

increases are inevitable; there are clearly opposed influences in the Soviet Union. But its capacity for supporting arms will increase and we cannot be confident that a great increase in Soviet armaments will not occur in the future.

The probable economic growth of China is in some respects more ominous, both because of China's overt expansionist tendencies and because of the relative weakness of its neighbors. Although the future growth and political development of Communist China is highly uncertain, by 1970 Chinese heavy industry, and consequently its ability to support armed forces, may bulk very large indeed in comparison to China's non-Communist neighbors. In brief, if the Communist bloc remains aggressive, we, our allies, and the free world will have to face the prospect of increased spending on arms.

However, even large increases in defense spending would not have drastic consequences for our way of life. We could manage moderate increases in defense without any reduction of our present levels of consumption and investment. Even large increases might be possible without any reduction in the private sector of the economy. This, in fact, was done during the Korean war. The direct effects on the economy were reduced unemployment, and leisure, and some price and wage inflation. Inflation could be avoided by offsetting moderate tax increases to limit demand in the private sector of the economy.

The major defense objectives the United States has adopted in the postwar period can be summarized as follows: Deterring nuclear assault on the United States, limiting damage to this country if war comes, while seeking a favorable war outcome; deterring aggression against our major allies and aiding in their defense; and, finally, helping to defend other allies and the free world.

The principal objective of U.S. military policy has come to be the deterrence of nuclear attack on the United States. We *must* attain it. But attaining it means having the ability to receive a well-designed and well-executed surprise nuclear attack and to strike back effectively. The advantage a nuclear-armed aggressor possesses in a surprise attack is formidable, and we must not depreciate the great effect of the many obstacles to retaliation the aggressor can create. This task of deterring attack will remain difficult not only because of the rapid growth of Soviet nuclear strength but also because of revolutionary changes in military technology that are taking place, some of which may introduce greater uncertainty into the military balance. We will have to work hard and work continually throughout the decade of the 1960's to try to preserve a strong retaliatory power. And, should we succeed, we will not have complete assurance that war will not come, for the power to retaliate is not identical with the power to deter. General war might still come, perhaps by miscalculation, perhaps without either side really preferring war to peace.

If general war were to come, our military forces would be primarily concerned with limiting damage to the United States and its allies and with obtaining the best civil and military outcome that could be obtained. We should not expect the best outcome to be very good, however. Each delivered enemy bomb could do great damage, especially given our low level of civil defense preparation, and a large attack might destroy most of our population and economy. However, there are important possibilities for limiting damage through a combination of active and passive defense, through the use of offensive

force, and, especially, through preparations which would enable us to fight a general nuclear war in a controlled manner. With an expanded program aimed at limiting nuclear damage, and with luck, much of our population and economy might survive a general war.

In our defense of Europe we have evolved a dual strategy: that of opposing invading forces directly on the ground along with the strategic nuclear bombing of the Soviet Union. However, over time we have emphasized more and more the purely deterrent aspect of our strategic attack threat. Although the growth of Soviet nuclear power has weakened the effect of this threat, it undoubtedly retains much force in the defense of so vital an area as Europe. Even a small probability of a large nuclear war happening may serve to keep Soviet forces out of Europe. But this policy risks great damage to both the United States and Europe, and its credibility will lessen, perhaps dangerously, in the 1960's. As a result, interest is being focused on more direct methods of defense abroad. The need for such direct defense methods is still more obvious when we consider the problem of defending less vital areas abroad, areas for which we are most unlikely to want to undergo a great risk of all-out war.

These major objectives of our defense policies are widely, although not completely, agreed on. There is much less agreement on how to attain either our general war objectives or those associated with direct defense overseas. On general war, it is convenient to distinguish five distinct positions:

The world annihilation view.—Not everyone holds that it is rational to deter war through the threat of nuclear retaliation. Many distinguished people regard a general thermonuclear war as risking all mankind. They hold that nuclear war cannot be a rational instrument of policy. This view focuses attention on the worldwide effects of radiation that would follow a general nuclear war. It appears that such a war would lead to a shortening of life, an increased incidence of genetic defects and of leukemia and bone cancer throughout the world. Serious as these effects are, these worldwide radiation effects would probably come to less than that from natural background radiation. Moreover, there is little evidence that the nuclear powers are planning to procure weapon systems that will lead to greater worldwide fallout damage in the future. The opposite may be true. Without depreciating the awful consequences of a large nuclear war, especially for the participants, it would be dangerous to assume that an aggressor would be deterred from launching a war by worldwide radiation effects. However, there are uncertainties; the fallout problem is not entirely understood, more serious effects may yet be discovered, and new and more devastating weapons may be developed and procured in the course of the 1960's. In any case, there would be worldwide damage from a general nuclear war, and governments have an urgent obligation to take this damage into account in their preparations just as they have an obligation to weigh the prospective damage to their own population, that of their immediate neighbors, their allies, and their enemies.

The mutual suicide view.—Much more serious would be the effect of a general nuclear war on the participants. Possible attacks, equivalent to several thousand megatons of TNT delivered on the United States, could kill over half of our population. Moreover, our entire population is at risk. This fact, along with the expectations

that Soviet civil society is similarly exposed, leads to the view that a general war would inevitably mean the destruction of both sides.

Belief that nuclear war inevitably would result in mutual suicide results in an almost exclusive focus on deterrence-only policies; that is, policies intended to prevent war, not to mitigate its consequences if it were to come nonetheless. This view, often implicit, is made explicit in the doctrine of finite or minimum deterrence. ("Minimum" deterrence, in another sense, that of preventing war at minimum cost, enjoys practically universal acceptance.) The minimum deterrence doctrine holds that we should unilaterally reduce our general war capability by cutting down the active defenses of our cities, by not spending money on civil defense, and by limiting our offensive forces to a level adequate to destroy in retaliation some, perhaps only a few, enemy cities. It assumes that deterrence is *easy* and that working toward deterrence is *enough*.

The minimum deterrence doctrine recognizes two important truths: First, that it is not necessary to promise total destruction to a nation to deter it. Second, that the strategic nuclear balance is unstable and that we should try to stabilize it. However, this doctrine has important limitations. Contrary to the view that deterrence is easy, the difficulties of assuring retaliation *are* great. The effective weight of attack delivered in retaliation might be very much less than the level that would be lethal to a nation. It might, in some circumstances, permit the aggressor to recover rapidly. Most importantly, this view assumes that both sides would inevitably direct a great weight of attack against opposing civil targets. It is by no means certain that this would happen in a general war; both sides might have a great incentive to avoid cities. A nuclear war might be blind destruction, but on the other hand it might not. At best, it would offer a risky prospect. Nevertheless, although well-chosen defense policies can reduce the likelihood of war, it seems doubtful they can reduce its likelihood to zero. These considerations argue for something more than complete dependence on nuclear deterrence.

Deterrence plus insurance.—This view gives great emphasis to the difficulty of having an assured retaliatory capability. It also holds that different possible outcomes of a general war can be distinguished and that the outcome would depend on the preparations of the contenders, their war objectives, and circumstances at the war's inception. This view does not place primary reliance for the defense of any very large part of the world on the threat of general nuclear war. For that objective, it emphasizes capabilities for direct defense abroad. It includes insurance as well as deterrence capabilities—insurance in the form of strong active and passive defenses in the United States and strategic forces designed to attack the enemy's military forces. And it includes insurance in the form of an ability to fight a nuclear war in a controlled manner. Finally, it is concerned about the stability of the balance of terror, the danger of a crisis exploding into a general war.

Extended deterrence.—Much of the burden of the defense of Europe in the 1950's has rested on the threat of a U.S. attack against the Soviet Union even in the face of nonnuclear aggression. The extended deterrence doctrine recognizes that the threat of U.S. initiation of general nuclear war has been and is an important bulwark of our defense abroad and seeks to make it more credible. (It should be distin-

guished from the declaratory policy of making threats of general war in circumstances in which very great devastation to the United States would seem to be a *certain* result.) This increased credibility would come from an expansion of offense forces, our air defenses, and our civil defenses. However, although much could be done to strengthen our ability to wage general war, the net effectiveness of such a program in the 1960's must inevitably be uncertain. And a greatly expanded program to increase our general war capabilities might increase the chances of general war, because it would make us look more threatening. It might increase *his* likelihood of hitting us first. This is not to say that a program aimed at sustaining the force of our general war threat as a deterrence to aggression abroad would be infeasible or without effect; it is to say that such a program would be difficult, costly, uncertain, and risky.

Massive retaliation.—This doctrine applies the threat of general nuclear war, or the threat of actions which make a big war substantially more likely, to the defense of much of the free world. However, if our threat of general war retains some validity in the defense of so vital an area as Europe, it loses much for other parts of the world. And the expected shifts in the military power balance in the 1960's will diminish the validity of this doctrine throughout. In sum, it appears that a greater concentration on direct defense of all overseas areas will be needed.

The principal views to be found for the direct defense of overseas areas are as follows:

Dependence on tactical nuclear forces.—A policy of defending overseas areas by using small nuclear weapons on the battlefield would interpose a level of defense between the use of nonnuclear weapons and all-out nuclear war. They would give us graduated deterrence. However, the Russians have these weapons, too; a tactical nuclear war would be two-sided. One consequence is that such an exchange might result in great civilian damage in the area fought over. Another is that although any war between the United States and the Communist bloc carries the grave risk of exploding into all-out war, a nuclear war would seem substantially more likely to do so than a nonnuclear one. Even so, we cannot dispense with a tactical nuclear capability; in some circumstances we might elect to initiate this type of war. On the other hand, perhaps we are preparing our overseas forces too exclusively for this type of combat, and neglecting preparations for non-nuclear conflict.

Establishment of independent nuclear forces.—A second alternative for the more direct defense of oversea areas, one already chosen by Britain and France, is to build up independent nuclear forces. Or a European force might be created. However, if either a European or separate national force is to have a stable retaliatory capability in the face of a nuclear assault, it must be designed to survive an enemy first strike. This task is difficult even in the United States. If not attained abroad, or worse, if not even attempted, additional nuclear forces could be seriously destabilizing to world peace. And for the United States to aid in the establishment of independent nuclear forces runs counter to our policy of discouraging the spread of nuclear weapons around the world. This policy has been based on the belief that the long-term security of the United States and the entire world would be prejudiced by the wider diffusion of bombs—especially if

they were to get into the hands of irresponsible powers. Nevertheless, the process of diffusion is underway. Though difficult or impossible to stop it, it may be possible to slow it down. In the end, we might find ourselves forced to help build up the nuclear capabilities of some of our allies if feasible alternatives have been foreclosed. We should be ready for this contingency.

Use of nonnuclear forces.—The distinction between a nuclear and a nonnuclear bomb detonation is now, and will remain for some time, unmistakable. It is this distinction that gives most support to the hope that a nonnuclear limited war could be kept limited. This distinction seems worth preserving. Moreover, contrary to the widespread belief, we do *not* have a basic inferiority in nonnuclear capabilities in many areas abroad. For example, the economic resources, population and technology of the NATO powers are superior to those of the Warsaw Pact countries. (The situation of the non-Communist countries of Asia is less favorable.) In Europe—where we are strong—we have not drawn sufficiently on our underlying nonnuclear strength. Actually an economically feasible goal for NATO would be nothing less than the ability to defeat Russian forces, allowing for the mobilization potentials of both sides, at the nonnuclear level. Such a policy, although not a complete one for the defense of Europe, would do much to free NATO policy from having to face the grim alternative of ineffectual action or nuclear war. However, the history of NATO throws serious doubt on the political likelihood of such a course, in the absence of a crisis.

No informed person can view the longrun prospect for peace with any equanimity. We are in an urgent arms race; in fact, we are in several. There is the race in military technology, the race in trying to preserve retaliatory capabilities, the race toward outer space, and others. Some are harmful to the cause of world peace, but not all of them. This fact makes it important to distinguish among them. Those aspects of the race that promise to reduce the likelihood of war or its excesses if it comes, deserve support; this is not true of those that act to make war more likely or excessively destructive. And there are several ominous developments of the latter kind: the possibility that the uneasy balance of deterrence may be upset, the diffusion of nuclear weapons throughout the world, and, perhaps most importantly, the longrun consequences of advancing military technology.

In addition to seeking a peaceful solution to our security problem through national defenses we can try to mitigate the worst aspects of the arms race through disarmament. Or rather through *arms control*, for attempting to control arms seems to be a more fruitful approach toward a stable peace than the attempt simply to do away with arms. In fact, some agreements aimed at eliminating arms might in fact make war more likely. Although agreements on the control of arms have proven difficult to conclude in the postwar period, there seem to be several possible areas of mutual interest between the Soviet Union and ourselves. Agreement might be reached on measures to reduce the likelihood of a deliberate surprise attack, or to reduce the possibility of a war by miscalculation, or on the diffusion of nuclear weapons, or on some form of disengagement abroad. Such partial agreements might be useful because, if our goal is a peaceful evolution of our society and that of other countries rather than the elimination of

armaments per se, agreed measures would not be intended as a replacement for national defenses.

In sum, the decade of the 1960's will be a decade of great danger. We have been thrust into a situation in which nuclear threats, counter-threats, and coercion seem inevitable. In this situation we are faced with three broad choices: (1) The defense objectives we will support, (2) the extent to which we are willing to risk all-out war in support of these objectives, and (3) our willingness to make economic sacrifices. If we try holding Communist military power behind its present boundaries, and if it presses openly against them, then we might be forced into a large defense effort—or alternatively forced to abandon some of our defense objectives abroad. If, on the contrary, the Communists come to accept the status quo, some of our defense efforts could be reduced. We should be clear, however, that preserving a secure retaliatory power will be difficult in any case. Beyond that we should be prepared to meet aggression over a wide spectrum. Where possible, we and our allies should build up defenses abroad that do not force us to step up the level of violence substantially if these defenses are to be effective. This is not to say that we might not choose to increase the level of violence, for there may be circumstances in which we would not only want to threaten greater violence but to carry out our threat in defense of our interests.

Our preferred general war alternatives for the 1960's would seem to center on the deterrence-plus-insurance position. This view does not deny extended deterrence some value; rather it holds that the defense of overseas areas should depend more on direct defenses abroad. And probably the single most useful direction in which we should move abroad is to emphasize nonnuclear defenses more in our network of alliances.

It is not possible to predict with any confidence the pattern of the defense budget over the next decade. There is too much uncertainty in technology, in the future behavior of the Communist bloc nations, and in our own responses to challenges. An extrapolation of the trend of the past few years suggests that defense budgets might drift downward as a percentage of our gross national product. However, if we try to maintain a more certain ability to retaliate after attack and to limit damage to the United States, while maintaining strong forces abroad, our defense budget may have to increase at a rate comparable to the rate of growth of our GNP or faster; perhaps faster because the rapid growth of the Soviet and Chinese economies and, possibly, defense budgets may force us to—unless we limit some of our overseas objectives or succeed in shifting more of the burden of defense to our allies.

Alternatively, if we were to adopt the minimum deterrence doctrine for general war, and if Communist bloc reductions in ground forces, along with its recognition of current boundaries seemed to reduce the threat of aggression abroad, we might reduce our defense budget sharply. On this assumption, it might fall during the 1960's to, say 5 or 6 percent of our GNP from the present level of 9 percent.

Finally, we must continue to keep in mind the possibility that a great war crisis could occur sometime between now and 1970. If so, our defense budget might have to be greatly expanded, possibly to \$100 billion a year or more.

I. OUR SECURITY PROSPECTS IN THE 1960'S

A. OUR MAJOR MILITARY OBJECTIVES

The major military objectives of the United States as they have evolved over the past decade or more can be summarized as follows:

1. To deter direct nuclear attack on the United States which might occur deliberately or as the result of miscalculation or accident.

2. If deterrence fails, to limit damage to the United States and obtain the best war outcome that could be obtained.

3. To deter aggression against our major allies, and if deterrence fails to help to defend them.

4. To aid in the defense of other allies and of the free world.

These objectives cannot be easily translated by planning staffs into military requirements for the development, production and operation of weapon systems. On the contrary, they interact with each other and partially conflict; even the simplest are plagued by major technical and strategic changes and uncertainties. The first two, deterring nuclear attack on this country and limiting damage to it, were first considered seriously only after August of 1949 when the Russians, unexpectedly early, detonated their first atomic bomb. Nor are they independent of each other. Our ability to limit damage to the United States and to obtain a favorable military outcome if a war occurs will affect both the willingness of the Communist powers to engage in aggression against our major allies and the likelihood of an attack directly against the United States. And our success in helping to defend allies abroad will affect the long-run ability of the United States to survive as a free society. Moreover, most of our military objectives are subordinate to overall national foreign policy objectives which themselves are far from precise and unchangeable. Every important military policy issue which faces us has significant nonmilitary foreign policy aspects: The vulnerability of the United States to attack, alternative methods of aiding the defense of our allies, disarmament, the diffusion of nuclear weapons. In the narrow but crucial context of the East-West conflict, the threats to the West take many nonmilitary forms: Ideological, economic, cultural. No one could argue convincingly that our policies in this conflict should be settled only on military grounds. But the military component of our foreign policy deserves separate study. It provides the sanction to keep the cold war cold. Most importantly, there is a serious military threat, and the consequences of war in the 1960's are so grave as to dominate many of our foreign and domestic policies.

The relation of these military objectives to the organization of the Department of Defense and to the organization of our budgets for defense is not obvious. We are used to thinking of our military problems in terms of the separate services, but the traditional allocation of functions among services no longer conforms very closely to our objectives. Moreover, the structure of our defense budget is organized in large part according to the inputs to weapon systems, that is, according to the men, equipment, fuel, and pay that goes to support our Military Establishment. It yields relatively little information on how our defense effort matches our separate objectives.

Most people simply do not know, even approximately, what we are spending for deterring attack on the United States, or for defending Europe or Asia. The identification of a military activity with a single objective, even a broad one, is of course, an oversimplification. Many of our forces have a contribution to make to several objectives. Nevertheless, it is instructive to relate our forces to their primary objectives, and in this section is discussed each of the four major objectives, how we have attempted to accomplish them, the kinds of military capabilities used for this purpose, the scale of effort we have put into each, and the most urgent problems we face in attaining each one.

Deterring direct attack on the United States

The keystone of U.S. military policy has come to be the deterrence of direct nuclear attack against the United States through the threat of nuclear retaliation against the aggressor. The centrality of this objective scarcely needs explanation. We must attain it even in situations of the greatest international tension, situations in which the enemy's temptation to strike might be very great. Moreover, the task of assuring retaliation following a direct nuclear attack is much more difficult than is often believed. It is not automatic. We must have a strategic nuclear force which is prepared to survive a well-designed and well-executed surprise nuclear assault, and which can retaliate effectively.^{1a}

The advantage possessed by the aggressor in a nuclear war is immense. He may be able to choose the time of attack, prepare his forces, alert his defenses, and launch his attack by surprise. His forces, unlike those of the defender, can carry out their attack in a relatively predictable environment. This means that even without the advantage of total surprise, the ability to deliver the first thermonuclear blow against bases, political and military centers, and cities could be decisive. This crucial fact has become more widely understood in the past year. One of its major implications is that the strength of our deterrent power is not adequately measured by the number of bombers and missiles we and our opponent possess in peacetime. And it is not enough to consider the vehicles we can get ready on short notice, nor only those that, surviving an enemy assault, can be launched. We must in addition estimate how many actually would receive orders for launch, the proportion that would operate without a failure in flight, their ability to penetrate enemy defenses and to detonate on the right targets. Finally we must assess the actual damage done to the enemy targets, allowing for the possibility that these may be protected by passive defenses; the military forces that both we and the enemy might have surviving; and our own civil damage and that of our allies.

Each of these obstacles to retaliation is significant, and the combined effect of them in sequence might be very great. A force which looks formidable enough before the war, or in a first strike, might actually be able to do only very modest damage in a second strike.

^{1a} The most authoritative discussion of this problem is to be found in Albert Wohlsetter's "The Delicate Balance of Terror" *Foreign Affairs*, January 1959. The further references to this paper refer to the longer version published as P-1472, the Rand Corp., December 1958.

Consider only one of the obstacles: Selecting the right targets for retaliation. Since an attack can occur with little or no warning, and the interval between detection and reaction might have to be short, many plans must be made in peacetime, well before the actual circumstances of an attack.² Our vehicles might have to be assigned to targets on the basis of estimates of the strength of the successive barriers to retaliation. If we underestimate the enemy's strength and overestimate our own performance we might lose much of our force before it is launched and en route. Most of the few bombs that get through would land on low priority targets. If we overestimate the enemy, we would concentrate our force on relatively few targets and leave many unattacked. And even if we estimate the overall performance of our force correctly, there would be random variation among different units and vehicles which would lead to some targets being overkilled and others missed. Moreover, these questions, important enough in themselves, are dominated by another. What should we attack: civil targets, military targets, or both? There may be circumstances in which attacking one or the other would be quite wrong. If a large part of our strategic force were launched as the result of warning, or through the enemy's attack being poorly executed, we might want to concentrate against enemy military forces and to minimize civil damage to the enemy. If few of our forces were to survive, the only significant retaliation we might be able to manage would be against civil society.³ Moreover, our last-minute targeting decisions might be crucially affected by the policy of the enemy in attacking, or avoiding, our own cities. Altogether, the targeting barrier imposes a severe demand on our systems for gathering and communicating data on the circumstances of the outbreak of a war, and for making decisions at the outset of the war and throughout it. It emphasizes the importance of retaining control of forces.⁴

Even the final measure of our retaliatory power, the military or civil damage our forces are able to inflict in retaliation, is an incomplete index of power to deter. The deterrent strength of the damage we could inflict would depend on the alternatives facing our opponent. If he is faced with generally attractive prospects, and this would seem to be a plausible current forecast for the Soviet Union for the next decade, the alternative of striking the United States almost certainly would seem to offer unacceptably great risks. On the other hand, if he is severely pressed on the periphery or internally, or, most importantly, if it appears that general war may be inevitable—perhaps that we might strike at some point in an ascending spiral of violence out of a limited nuclear war—then striking first might be preferred to not attacking. It might seem less risky.

This assumes that our leaders, and theirs, are prone to consider carefully the full range of possible outcomes and the probabilities of

² Gen. Thomas Power in testifying before Congress had this to say about warning: "If you have no warning—zero warning—then ask yourselves this question, What can you do? Mind you, I told you our alert force was geared to 15 minutes warning. However, suppose we had no warning? Suppose he gets the missiles in quantity before we have BMEW's [Ballistic Missile Early Warning System] operational, or suppose BMEW's do not work out the first day they are in operation? Then what do you do? * * * This warning is the crux of the problem. We may not get any warning of a missile attack." "Department of Defense Appropriations for 1960," House Committee on Appropriations, p. 380.

³ For a discussion of the relation between our target objectives and the size of our surviving force, see the testimony of Secretary of the Air Force Douglas and that of the Air Force Chief of Staff, General White, hearings of the House Appropriations Committee on the Department of Defense Appropriations 1960, pp. 928-929.

⁴ For a further discussion of targeting strategies, see the discussion below.

their occurrence. However, we cannot be sure that Soviet or other Communist bloc leaders with nuclear weapons will be accurate calculators. They may be timid, or they may be willing to take large risks. If this latter possibility seems remote, consider the way in which Hitler might have behaved had he possessed thermonuclear bombs. While the present rulers in the Kremlin seem to have their wits about them, we are in no position to predict with confidence the behavior of those in command during the next decade. Nor can we be confident about other leaders who may in time come to possess nuclear weapons.

The objective of keeping nuclear weapons from landing on the United States has presented us with a dual problem: We must be prepared to retaliate after a well-designed and well-executed surprise attack, and we must operate our forces in a way which does not inadvertently trigger the very war we are trying to deter. We want to look formidable, but there could be risks in looking too threatening, especially if there were some weak links in our system of retaliation. And we want to avoid the unauthorized or accidental launching of weapons against Russia. Avoiding inadvertent war requires regard to safeguards which put an additional burden on our ability to retaliate against deliberate attack.

Deterring an attack against the continental United States through the threat of retaliation is the primary mission of our long-range bomber and missile forces. Over the next several years, this means primarily the medium-range B-47 bomber, the longer range B-52 equipped with its Hound Dog air-launched missiles, the Atlas and Titan intercontinental ballistic missiles of the Strategic Air Command, and the Navy's Polaris submarine missile force. Beyond that, there are the Minuteman ICBM and possibly an air-carried ballistic missile. No longer is this objective assigned to any considerable extent to overseas land-based forces. With the growth of Soviet nuclear delivery capabilities, it became increasingly clear that our overseas forces stationed close to the sources of Russian striking power could not be counted on to withstand an all-out nuclear assault. This fact, which has important implications for nations planning on creating their own strategic forces, became evident well before the advent of Russian ballistic missiles and has greatly influenced the development by this country of intercontinental range and sea-mobile nuclear delivery capabilities. This is not to say that overseas-based forces have no contribution to make to general war.⁵ They may be able to help significantly in limiting damage if deterrence fails, to contribute to a U.S. strike in response to an attack on an ally, or to penalize the aggressor if his attack were poorly executed by disrupting some part of it. However, our bedrock capability for deterring an attack on the United States must in the future reside largely in our strategic airpower (including the Navy's ballistic missile forces).

The other force contributing significantly to this objective has been our continental air defense system. It helps to protect our retaliatory force primarily by trying to give it warning of attack. It does this by providing warning barriers to detect enemy vehicles en route, and by providing active defenses designed to shoot down some part of the attacking force. If the enemy were to offset our active defenses

⁵ The term "general war" as used in this paper means a large scale nuclear exchange in which the homelands of the Soviet Union and the United States would be attacked.

by sending more vehicles, this larger enemy attack would become easier to detect in preparation for launch or on the way. And apart from its warning contribution, active defenses help to protect nonready bombers and missiles and those command and communication functions that are essential to carrying out the task of retaliation.

It is becoming widely recognized that we face in the immediate future the crucial task of assuring that our strategic power can retaliate with high confidence in the face of growing Soviet offensive and defensive capabilities, and to do this while keeping the risks of accidents and unauthorized actions low.

Much of this current concern is currently being focused on the possibility of a near-term weakness of our strategic force—symbolized by the “missile gap.” The concept of the “gap” is primarily concerned with one aspect of the problem of retaliation, the vulnerability of our forces to a ballistic missile attack. In fact, we should be concerned over the growing Soviet ballistic missile force, for ballistic missiles are a remarkably efficient and formidable surprise attack weapon. The great and predictable speed simplifies the aggressor’s problem of coordinating a worldwide attack on widely separated bases; this speed also makes totally ineffective all existing active defenses; its combined accuracy and warhead yield may assure the destruction of the soft elements on bomber and missile bases: Bombers, missiles, above-ground buildings, and crews.⁶ Some of our responses to this and other challenges have been announced: the “fail safe” or “positive control” method of launching bombers on the basis of ambiguous information on enemy movements, the sheltering of our first generation Atlas and Titan intercontinental ballistic missiles, plans for keeping some bombers in the air with bombs at all times, the procurement of the Polaris submarine missile system which promises the combination of mobility and concealment. Later systems will include the dispersed and sheltered and possibly rail-mobile Minuteman ICBM, an air-launched ballistic missile, and more advanced models of Polaris.

These actions, while crucial, deal only with one of the obstacles to retaliation. Other actions are underway to offset the others: For example, to assure that our forces can be more certainly controlled in war by providing protected command and communications systems, and a better ability to penetrate enemy defenses. An advancing Soviet technology and weapons capability forces us continually to adopt new and expensive methods of operating existing equipment and to procuring radically new systems. It is not well understood that the job of preserving a deterrent force is a complex and continuing one, and that it calls for frequent and often expensive changes in our military posture.

Our near-term problem of assuming a protected power to strike back is but one aspect of the problem of general war, though a central one. We must face several other vital questions: The extent to which gen-

⁶ The President, in his state of the Union address on Jan. 7, 1960, said, “In 14 recent test launchings at ranges over 5,000 miles, Atlas has been striking on an average within 2 miles of the target.” (Reported in the New York Times, Jan. 8, 1960.) Fourteen launchings is not a large sample, and there is a further extrapolation necessary in translating these data into Russian missile performance, but this test experience suggests the likely high lethality of ballistic missiles. A single missile delivered to the target area with a 2-mile circular probable error and a 1-megaton warhead would have a 90 percent probability of destroying the soft elements on military bases. Allowing for the fact that not all the missiles in the force could be readied on time or operate without failure, this high damage probability could be attained by the aggressor by assigning several missiles to each soft base to be destroyed.

eral war can be regarded as suicidal, the worldwide effects of a large nuclear war, the effect on the stability of the balance of terror of changing technology, and the continuing worth of our attempt to protect allies by threatening general war. There is a wide spectrum of belief on these and other questions. They are discussed below in part I-C.

Altogether, the United States allocates about one-fourth of its defense budget, something over \$10 billion a year, to those forces whose primary role is that of general war deterrence.

*Limiting damage and obtaining best war outcome if deterrence fails*⁷

Without doubt the best way to limit damage to this country is to prevent war from happening at all. The United States has attempted to do more than this. It has allowed for the possibility that deterrence might fail and that nuclear war might come by providing forces to try to limit damage to the United States and to secure the best war outcome. There are two reasons why we have tried to do more than deter war. First, because war might come in spite of our best attempts to prevent it, possibly after a deliberate and carefully calculated weighing of alternatives, or perhaps more likely, in haste or by mistake. We have prudently taken out some insurance against these possibilities. Second, because the deterrence of a war is likely to be related to how the war would come out. The expected military outcome and civil damage to both sides and to third parties should have a dominant effect on whether or not general war occurs.

The distinction between deterring general war and obtaining the best civil and military outcome may seem artificial. Preparations for defense in the prenuclear age did not distinguish as sharply between the deterrence of war and its actual outcome as we do, at least in the West. This is partly a result of the widespread view that a general nuclear war means mutual suicide. That outcome makes irrelevant who wins a military exchange and denies the possibility of limiting civil damage. Traditional American notions of winning a war seem inappropriate for a general thermonuclear conflict. Even if the outcome were not suicidal, the minimum amount of damage we would receive if the United States were hit with nuclear weapons would likely be great enough for us to view the experience as an unprecedented catastrophe. We would simply want to come out of the war as well as we could, to limit the catastrophe. Very few U.S. cities have to be attacked with nuclear weapons before deaths in this country would total more than 20 million. While a civil defense program combined with improved active and passive defenses could do much to limit our damage and permit the Nation to recover, it seems unlikely that we could have much confidence in keeping casualties and material damage to a level low enough for the war to seem anything but a disaster. However, a disaster is not necessarily lethal to the nation; if our policies can affect how many survivors there are, then we are interested in damage-limiting measures, and in the military outcome.

We have regarded this objective as important enough to warrant spending a substantial share of our total expenditure on our general war objectives, although this effort has been greatly overshadowed by our concentration on deterrence. With the appearance of a Soviet

⁷ For a more extended discussion of this subject see the forthcoming book by Albert Wohlstetter.

nuclear capability, we began to build up an air defense system in the early 1950's while greatly strengthening our strategic offensive force. The direct limiting of civil damage by the shooting down of enemy bombers and missiles has been the primary function of our air defense system from its inception, and our air defense weapons have been deployed mostly to defend civil targets. Our manned interceptors are largely to be found in the heavily populated parts of the country, especially in the Northeast heartland; Nike surface-to-air missile units are assigned largely to the defense of cities.

Our air defense forces have a traditionally difficult task made much more so by the advent of nuclear weapons and especially those of megaton yield. It might seem, incorrectly, that attrition rates close to 100 percent would be needed in order to justify the existence of a system for defending civil targets and no intimate knowledge of air defense systems performance is needed in order to understand that there is no prospect of anything like 100 percent air defense against a bomber or missile attack of any size. Air defenses have had a long existing set of difficulties: Electronic countermeasures used by the offense to confuse defense radars, approach to target at low altitude to evade detection and tracking, and several others. The advent of the ballistic missile worsens some of these problems very greatly and makes more troublesome the possibility that our active defenses will themselves be the object of attack by ballistic missiles.

Enthusiasm for air defense and for attempting to limit damage at all has waned with the disappointment of many of the early hopes, especially in the face of the combined threat of high-yield thermonuclear bombs and the ballistic missile. But air defense may continue to have an important damage-limiting function in addition to its even more crucial role in warning and aiding the protection of our deterrent force. Enemy bombers may remain a serious threat to the survival of the United States, even though Khrushchev has announced the approaching end of bomber production, not so much because of their ability to attack our relatively small number of major metropolitan areas, for ballistic missiles could do that efficiently, but because of the ability of a relatively small force of manned bombers to carry a great weight of bombs able to deposit very large amounts of radioactive fallout, to visit several targets on a single sortie, to carry out reconnaissance and hit targets of opportunity, and to attack our reserve forces. And the prospects for a useful active defense against ballistic missiles, although not encouraging, cannot yet be said to be hopeless.

Our second principal method of limiting damage has been based on attacking enemy offensive forces on the ground during the course of a campaign; to hit bomber bases, missile sites, and the other elements of enemy power which contribute to his ability to hit us. Here also the task of our offensive forces in reducing the weight of enemy attack launched against us is formidable. He too might adopt measures designed to protect his force from attack. The strategic-force basing options of hardness, dispersal, mobility, and concealment are open to him as well as to us. And we must expect that the first nuclear strike will likely, though not certainly, be his. Nonetheless, there might be many circumstances in the outbreak of war, for example, if his attack were to be badly executed or if we were to get warning of his attack

preparations, in which our forces could sharply limit the size of the enemy's offensive by damaging it on the ground.

These two methods, active defense and countermilitary attacks, would attempt to kill the enemy force in the air and on the ground. A third major direct method of limiting damage would be to try to reduce the effectiveness of the bombs he drops by civil defenses, by city evacuation, blast and fallout shelters, radiation decontamination, and postwar economic recovery measures. We have adopted this third method only in a token way, yet there is no doubt that much could be done at relatively low cost.⁸ Civil defense measures have assumed a crucial importance not only because of their relative efficiency in limiting damage per dollar spent, especially against radioactive fallout, but because fallout threatens the survival of our entire population. If the United States were to receive a heavy nuclear attack, deaths in this country, mostly from radioactive fallout, might come to 150 million people or more.

The close functional relationship among countermilitary offensive capabilities, active defenses, and civil defenses is not generally understood, for it is concealed by the apparently disparate nature of these activities and by the fact that they are not administered in Government as closely related activities.⁹ The complementarity among these capabilities is strong. Our prospects for limiting damage are sharply reduced if the enemy is free to launch repeated attacks against us, undisturbed by our counterattacks; or if he can roam over the United States without danger of being shot at by our active defenses; or if his delivered bombs have the ability to destroy the population over a large area because of the absence of civil defense. If we are without any effective civil defense, or if we appear to have ineffectual active defenses, we may well reduce our expenditure on these forces. There have already been significant reductions in our air defense forces.

Possibly more important than limiting damage by these three direct means is a set of indirect measures. By having a well-protected strategic force we hope to divert our opponent's resources to the task of countering this force and leave him little, if he behaves rationally, with which to attack our cities. The character of the diversions depends very much on the composition of our forces. We hope to force him to spend his resources on, say, more expensive missiles and bombers, antisubmarine forces, air defenses, and civil defenses—without overall success on his part—within his willingness or even his ability to allocate economic resources to military ends.

Finally, if deterring a war is the best way of limiting damage, deterring unrestricted bombing during a war may be the next best way. In short, the concept of deterrence may have application during a war as well as before. Deterrence during a war may mean the use of threats to bomb his cities and the demonstration of our resolve by the execution of some of our threats. Doing this, however, means not destroying all the civil targets he values if we are to be able to continue to threaten them. Thus, there may be an important damage-limiting

⁸ "Report on a Study of Nonmilitary Defense," Rept. R-322-RC. The Rand Corp., July 1, 1958.

⁹ Responsibility and budgeting for strategic offense is mostly the responsibility of the Air Force, but the Navy has an important and growing role. Air defense comes under all three services. Responsibility for civil defense is not to be found in the Department of Defense at all, but in the Office of Civil and Defense Mobilization.

aspect to our conduct of a general war.¹⁰ What happens to our cities and to our population if war occurs may depend mostly on the damage we actually inflict on the cities and population of the enemy and on our ability to threaten reprisals during the course of the conflict. This view contrasts sharply with the image of general war as the blind exchange of missile salvos, one salvo to a side, with only radioactive rubble afterward. It is a common and costly failing of Americans to ignore the long-run consequences of wars; a relevant time to consider in a general nuclear war may be no more than a few days or a few weeks after the beginning. Contemplating the end as well as the beginning of a general war is a useful activity. Most importantly, it leads to a very different view of general war, one that does not necessarily imply the end of our history.

We insist on having the ability to deter attack on the United States with high confidence. We do not insist on this high confidence in the damage-limiting objective. We do not because we cannot. There are too many options open to the enemy to reduce the effectiveness of our damage-limiting offense and defense. Yet if the circumstances of the outbreak of war are favorable, if the enemy's capabilities are limited, or if he simply regards our offensive and defensive forces as being more formidable than they deserve to be, our forces could serve a useful and even essential damage-limiting purpose. One view sees a modest but significant damage-limiting objective for the 1960's: To prevent national obliteration, to keep fatalities to a level of, say, 50 million, and hopefully to much less than that.

The second half of this objective is obtaining the best military outcome to the war we can manage; in short, to try to win. Such old-fashioned terms as "winning" and "victory" have fallen into disfavor in connection with the outcome of a general thermonuclear war in view of the widespread belief that the question of "who won" will seem largely irrelevant to the few survivors. But if the damage is not complete, then such familiar concepts as winning, stalemate, losing, armistice, and the terms on which hostilities end need to be taken into consideration. At this point in time, it appears that the prospective military outcome of a general war remains of crucial importance.

One estimate of the cost of our forces that might be attributed to this objective comes to about one-tenth of the defense budget, perhaps \$5 billion a year. This includes those air defense weapons directly defending our cities plus our small civil defense budget. (This neglects the fact that our offensive forces also serve a damage limiting function in the event deterrence fails and we have to use this force in combat.) Perhaps a more meaningful estimate is the cost of what might be called our general war forces; that is, our strategic offensive force (including our submarine missiles), active defenses and civil defense. This total, including both strategic offense and defense, is in the neighborhood of \$15 billion a year, or about 35 to 40 percent of our national security budget.

¹⁰ There is a conflict between the objective of deterring a general war by promising the enemy that if he attacks he will inevitably suffer the most awful consequences in the form of civil damage, and the objective of limiting U.S. damage indirectly by carefully controlling our attack on enemy cities in hope that this will help preserve our own. See below, pt. I-F.

The defense of major allies

Our primary defense objective in the period before the United States was directly threatened was the defense of Europe. It remains our most important defense objective abroad.

From the beginnings of NATO, our policies for Europe's defense have been based on a dual strategy: Direct defense on the ground against invading forces, along with strategic bombing against the Soviet Union. This was a straightforward application of the World War II strategy for defeating Germany; to fight on the ground while using long-range airpower to interdict lines of communication and to strike at the industrial base of the enemy, and to prevent his mobilization. Strategic bombing seemed essential in the face of the ground strength of the Soviet Union. But a somewhat different aspect of this policy gradually evolved during the mid-1950's—the purely deterrent aspect of the threat to strike at the Soviet Union heartland. The aspect which focuses on preventing the war from happening at all as distinct from deterring its continuance if it were to begin. The damage threatened by nuclear attack against Soviet cities promised to be so immense that the attempt to muster an effective defense on the ground seemed of decreasing importance. It contributed to a weakening of the incentive to meet the goals for ground defense. The function of the direct defenses often came to be regarded as that of a "tripwire" for strategic retaliation.

The force totals which conventionally represent the preponderance of Soviet ground strength are 175 divisions, many armored and equipped with more modern weapons than those of the West; about 20,000 operational aircraft; more than 400 submarines (as compared with the 79 the German had at the outbreak of World War II), and undoubtedly a growing force of short- and intermediate-range ballistic missiles. In Western Europe, we have 20-odd divisions, 5,000 tactical aircraft, and antisubmarine and carrier task forces. This estimate of 175 Soviet divisions versus the 20 on the scene in Western Europe has undoubtedly grossly exaggerated Soviet strength. The total manpower strength of the armed forces of the Soviet Union and NATO provides a very different, although imperfect, guide. The Soviet Union is reported to have about 3.9 million men under arms, the NATO powers over 5 million. This leaves out of account the satellites, a dubious factor. In any case the West has regarded its offsetting advantage as being in nuclear bombs and in the ability to deliver them.¹¹

The defense of Western Europe, which has rested primarily on the threat of strategic bombing against any but the most limited non-nuclear invasions, has come increasingly to question as Russian nuclear capabilities have grown, for it risks great damage to both Europe and the United States. But while its credibility is weakening, the threat hardly can be totally without effect as is often charged. By preparing almost entirely for a nuclear war we do make it more likely that this, in fact, would be our response. This should give the Russians pause. But if war comes to Europe, either deliberately or inadvertently, this policy helps to assure that it will be an all-out war. This is so because we have narrowed our choices to all-out war or no

¹¹ See "The Soviet Union and the NATO Powers, the Military Balance," published by the Institute for Strategic Studies, London, 1959.

war. If the Soviet Union assumes that we will act, it will be all-out war; thus it would seek to gain the advantage of the first nuclear strike. It is not only the credibility of this policy that is increasingly questioned but also its riskiness. And as our allies come to understand more of the facts of nuclear warfare, there will very likely be an increasing demand for the adoption of an alternative policy. In sum, the dilemma of European defense since the growth of Soviet long-range nuclear capabilities has been on the one hand the relative weakness of Western Europe on the ground and, on the other, the risk of great damage both to Europe and to the United States from attempting to compensate for this weakness by threatening to attack the Soviet Union with nuclear weapons.

Our most important and difficult problem in defending Europe is creating a defense which is both effective and credible—one that does not involve unbearable consequences. Several alternative policies are possible: Strengthening our threat to wage general war in response to aggression in Europe, increased dependence on tactical nuclear weapons in the direct defense of Western Europe, the creation of independent national nuclear forces, the creation of a single Western European nuclear force, and the building up of nonnuclear defenses. It seems clear that no single alternative will be enough, a combination of some of these capabilities will continue to be needed. However, some are incompatible and some might be positively harmful. The main outlines of the direction in which it appears that NATO should move are suggested by an examination of the basic premises of NATO: That the Soviet Union has a basic advantage in nonnuclear capabilities, while NATO's strength lies in nuclear war. Neither of these beliefs stands up under scrutiny. Out of a total NATO budget currently devoted to the direct defense of Europe, over \$20 billion a year, and out of the even greater economic potential of NATO, it should be possible to construct a defense system able to resolve the current dilemma.

The defense budgets of our European NATO allies total about \$14 billion a year. The great majority of this is for the direct defense of Western Europe, after we exclude the forces assigned to colonial territories and the British Strategic Bomber Command. The U.S. direct contribution, if we include the forces assigned to NATO in wartime, plus military assistance, may come to a bit less than \$10 billion a year, about one-fourth of our national security budget.¹²

Defense of other allies and of the free world

Many of the countries in the arc from Iran through South and Southeast Asia and up to Japan are open to overt Communist aggression as well as less overt forms of warfare such as propaganda and the fostering of insurrection. The problem of defending these countries is characterized both by the difficulty the United States faces in aiding their defense, given their geographical proximity to Communist power and our own distant location, and by the fact that the United States and most of the countries in question have not regarded each other as traditional allies.

Throughout most of this area there is a clear predominance of Communist nonnuclear strength. We have used our nuclear threat

¹² The forces assigned to European defense can, of course, be used elsewhere as some were during the crisis in Lebanon. However, if they are used elsewhere, this is at the expense of a weakening of European defense.

to counter Chinese aggression, and since China, it appears does not yet possess nuclear weapons, this policy has seemed less risky than the same threat against Russian aggression. The doctrine of nuclear massive retaliation in response to peripheral aggression was after all mostly in response to the threat of Chinese aggression. And for all we know this may have had a considerable effect in deterring the Chinese, even if in the end we refrained from using these weapons in Indochina in 1954, and today would not use them lightly. One reason we hesitate is that the Soviet Union might respond, perhaps reluctantly, to our use of nuclear weapons against China by giving the Chinese some of these weapons or by delivering some of them against our own theater forces. Moreover, there are political constraints. In addition to the likely protests from our European allies at so rash a move, the United States has been accused of being too willing to drop bombs on Asians, and this is a charge that we don't want to be true. Finally, it seems in our interest to try to keep nuclear weapons from being used as a matter of course in international conflict. Employing them a second time might mean their permanent banning; but it is at least as likely to lead to their more rapid diffusion throughout the world with the increased threat of their use in a wide range of conflict.

Our dependence on nuclear weapons is not complete. We have demonstrated our ability to hold positions of strength along the periphery of the Communist bloc where we have been able to use our naval and airpower to advantage: Korea, Taiwan, Japan. It is on the continent in South and Southeast Asia, in regions remote from our naval and air bases and lines of logistic support, that we are especially weak. Even there, however, Communist aggression may remain below the threshold of large-scale aggression where direct U.S. involvement would be necessary to keep the threatened countries free. However, Chinese behavior suggests that overt aggression is likely during the coming decade. And during this time China will in all likelihood not only experience a rapid growth in resources for nonnuclear war, but will also acquire nuclear weapons of its own.

The extent of our budget commitment to the defense of this region is quite sizable. It may come to about \$8 to \$10 billion a year, about as much to the direct defense of Europe, in the form of naval, ground, and air forces mostly stationed in the Pacific and the Far East, and in the form of military equipment and defense-support funds.

The remaining portion of our national security budget, about \$10 billion a year, is devoted to mobile reserves in the continental United States, to personal training, to logistic support activities, to air and sea transport capacity, and to the administration of our defense establishment.

* * * * *

In summary: Our national security expenditures come to about \$45 billion. The bulk of this total is for our military forces with most of the remainder for nuclear resources and foreign military assistance. Well over half of our defense effort goes into forces designed for the direct defense of oversea areas, something in the neighborhood of 60 to 65 percent. Of that amount, over one-third, \$10 billion a year, is associated with the defense of Europe, an amount rather more than matched by our European allies; somewhat less to

the defense of Asia; and the remainder to research and development, training, and mobile reserves back in the continental United States. The remaining 35 to 40 percent of our defense budget is devoted to forces whose primary function is deterrence of nuclear attack on the United States and its allies and for the limiting of damage. Before looking at the general war and direct defense problem more closely, it is useful to consider briefly how we arrived at our present situation.

B. THE EVOLUTION OF U.S. POSTWAR MILITARY POLICY—CHALLENGE AND RESPONSE

Decisions on military policy are for the most part, or should be, in response to some challenge or opportunity offered by other nations. In peace as well as war, the military problem is characterized by action and reaction. Good planning includes reaction before the enemy does as well as afterwards. It anticipates his moves. This is a fundamental point in considering future objectives and capabilities both of the Communist powers and of the West.

It is in a somewhat different sense that U.S. policy has been reactive since World War II. During this period the United States and the Western European nations have been on the defensive, anxious to preserve the status quo. At the very end of the war the United States was in a position of great strength vis-a-vis the Soviet Union, which had been severely damaged in the war. We were strong both in Europe and Asia not only on the ground but also in the air thanks to our powerful, long-range air forces and our monopoly of nuclear weapons, small as our supply was at that time. The high point in U.S. world power came in 1945, and the years since then have been years of a rapid decline in our world military position. For immediately after our rapid demobilization and withdrawal from abroad, the Communists moved into the power vacuum. Our response was to adopt the policy of containment, a policy that remains at the center of Western strategy. It is defensive; it leaves the initiative to the Communist powers. And they have seized it on several occasions.

In order to understand better our current strategic position, military objectives, and postures, it is useful to consider the major Soviet military advances since 1945, which are conveniently divided into three parts: (1) The relative strength and modernization of its ground forces; (2) the early breakthrough in atomic weapons and the beginnings of Soviet strategic airpower; (3) the development of thermonuclear weapons and the rapid Soviet advances in strategic airpower through the development of rocketry.

The strength of Russian ground forces

At the end of World War II we had three uniquely important assets: We had the atomic bomb and had demonstrated against Japan the capacity for using it; we had powerful armed forces in operation; and we possessed an unmatched economic potential for war, a potential that had recently been applied with great effect at many points around the globe. One of these assets we gave up without hesitation. The power imbalance it created has been described by James King as follows:

The hasty demobilization of 1945 and 1946 left U.S. armed services in a situation that can fairly be described as a shambles, from which they were only

slowly recovering when they were catapulted into a new emergency rearmament effort by the Korean war. The Armed Forces, which numbered over 12 million men on V-E Day in 1945, had dropped to less than 1.4 million by the spring of 1948. The Air Force, first given separate existence by the National Security Act of 1947, had at the time only 38 combat groups of planes. The Army's first postwar personnel ceiling was 670,000, but by 1948 actual strength had fallen to 541,000 because of the inadequacy of volunteer enlistments. The Navy fared better than the other services, but its strength by early 1948 was under 500,000 including the Marines. The defense budget submitted in 1947 for the fiscal year 1948-49 called for \$11,256 million for all services.¹³

The Soviet Union reduced its forces, but not as much. More importantly, we brought ours home. The challenge of Communist aggression in Iran, Greece, Czechoslovakia, and Berlin woke us to the threat of Communist aggression in the late 1940's and in the early 1950's. Our first response, begun in 1947 under the Truman doctrine, was the construction of a network of alliances, a network which by now has committed us, in varying degrees, to aiding in the defense of most of the countries peripheral to the Communist bloc. Our next response, delayed until 1950, then triggered by aggression in Korea, was to use our economic potential for war by greatly increasing our own defense effort and helping to organize and support that of our allies. Our defense budget went from \$15 billion in 1950 to \$50 billion in 1952. We responded to overt and successful Communist aggression by committing ourselves to the defense of the free world and by backing up these commitments in a convincing fashion by allocating resources to this end and, even more impressively, by fighting hard in the defense of South Korea. This response may have done as much as any single U.S. act in the postwar period to persuade Soviet leaders of the virtues of competitive coexistence.

The nuclear breakthrough and beginnings of strategic airpower

The Russians seem to have understood very quickly the importance of nuclear weapons and airpower technology, if we can judge by three early postwar Russian developments: The high priority given to the development of nuclear weapons; the rapid copying and production of our latest operational long-range bomber at the end of the war, the B-29, which became the TU-4, the first Russian strategic bomber; and the large effort devoted to building up an air defense system to counter our own strategic offensive power, an air defense effort perhaps best symbolized by the remarkably swift development and large-scale production of the MIG-15 fighter. And it should be recalled that these military developments, which were concurrent with the maintenance and modernization of large Soviet ground forces, took place during a period when the Soviet economy was struggling to recover from great wartime destruction and dislocation.

Russia's possession of nuclear weapons and even limited means of delivering them profoundly altered the character of the defense problem of the West. Even today the implications of this change have not sunk in completely in the West. Above all, it meant that North America could be effectively bombed, and with nuclear weapons. While initially, in the early 1950's, the Russian had few bombs and bombers, it was no longer true that we could bomb Russia as we did Germany and Japan, in confidence that we could not be touched.

¹³ James E. King, Jr., "Collective Defense: The Military Commitment," published in "Military Policy Papers," the Washington Center of Foreign Policy Research, December 1958.

The major response these developments evoked, in addition to lending urgency to the problem of containment and rearmament in general, was an expansion in our strategic force and the decision to construct a North American air defense system. Our air defense goal was a near-perfect defense of major U.S. cities. We had some important advantages, including in particular, remoteness from the Soviet Union. As long as the Russians were confined to the use of aircraft with the restricted range of the TU-4, about 4,000 nautical miles, and until they developed the technique of aerial refueling, they seemed constrained to follow predictably direct routes across the Arctic. Our warning lines and active defenses could be deployed across these routes. In any case these Russian bombers could be used only once, since one-way missions would be necessary. Atomic bombs were heavy and scarce and were thought likely to remain so. This meant one atomic bomb, at most, per aircraft, possibly only one to each cell of several aircraft. Our Air Force had developed doctrine and high skill in strategic bombing over several decades; we hoped that it would take the Russians many years to acquire it. Finally, here was the field where the ingenuity of American science could be used to the utmost, and in a cause believed by many scientists to be a good deal more worthy than the other great contribution of American science to warfare, the atomic bomb. Many innovations in electronics, in guided missiles, both ground and air launched, and in data handling and control systems promised bomber attrition rates very much greater than those experienced in World War II. Our image of the job to be done was relatively straightforward. There would be waves of Russian bombers flying great circle routes across the Arctic and down through Canada toward our cities. Our task was to provide warning belts, radar control systems and long- and short-range defensive weapons able to destroy a very large proportion of the oncoming bomber waves.

Our hopes that the Russians would be slow to develop a formidable intercontinental strategic capability were disappointed by the early appearance of modern jet bombers, bombers of a type that would make more difficult the job of actively defending our cities even in the face of a straightforward attack. More significantly, it became increasingly clear that we could not count on "Western-preferred-Soviet-strategies," that is, attacks directed at the strongpoint of our defenses.¹⁴ We had to consider seriously attacks aimed at weak points, particularly attacks which attempted to avoid our warning systems and our defenses by flying around them, over them, under them. Our offense had a considerable bag of tricks. Why shouldn't the Soviet offense? And while we had underestimated the Russians' ability to build up long-range airpower, we overestimated our own capabilities to build up a defense. Our air defense system was slow in coming into being, and its natural complement, a program of civil defenses, was not seriously considered.

A second implication of these Russian advances was the threat posed to our own strategic force. In the late forties and early fifties our ability to use strategic airpower against the Soviet Union was almost entirely dependent on oversea bases. The deployment of our

¹⁴ See Wohlstetter, "The Delicate Balance of Terror" *op. cit.*

strategic force to these oversea bases would necessarily take time and probably could not be accomplished before these bases were attacked. If they were attacked with atomic weapons, they would be unusable; if they were attacked while our aircraft were being prepared on them, much of our force might be lost on the ground. Moreover, there was now the possibility of a surprise Russian attack on our bases in the continental United States. Our atomic bomb of nominal yield (20 kiloton equivalent of TNT) dropped on an ordinary airbase would, with high probability, destroy or damage seriously all of the aircraft, aboveground buildings and personnel on the base, and make it unusable for a long time. The advent of the Russian strategic nuclear threat meant that our strategic force had to reduce its dependence on oversea bases at the very time we were in the midst of building up an extensive worldwide base system. The planned use of these bases had to be restricted more and more to a less vulnerable refueling and post-attack recovery function. This also meant our force had to shift even more toward long-range aircraft and the use of aerial-refueling methods. In North America it meant the addition of more warning lines and, later, plans for putting our strategic force on a higher state of peacetime alert. The problem of nuclear-surprise-attack on the United States had arrived although it was not widely recognized. Each of these responses called for additional measures and, in some cases, the halting or cutting back of base programs underway. This phenomenon was to be repeated many times in the 1950's as the Russians repeatedly gave evidence of new advances in military technology. It will undoubtedly be a common phenomenon of the 1960's. The defense of the United States in a period of revolutionary changes in technology inescapably involves rapid change in plans, weapons, and methods of operation.

These developments undermined our policy of preparing for a world war III on the model of World War II. America, protected by two great oceans, had been the arsenal of democracy in two world wars, but damaged by nuclear weapons, it could no longer hope to mobilize its resources for a big war to be fought abroad. For, quite apart from damage that would disrupt our mobilization, there were good reasons to expect that the pace of a nuclear war would be very much faster than a nonnuclear one, that the war would be settled one way or another before the year or more needed for our mobilization had passed. The possibility advanced by some (and still advanced in some Russian military writings) that a nuclear exchange might be followed by a period of "broken backed" ground warfare seemed to be ruled out by the immense power of nuclear weapons. They would surely settle any conflict in which they were used. This meant that to an extent far greater than ever before we would need to maintain forces in being in peacetime if we wanted to be sure of using them in a major war. The great asset of a large gross national product suddenly became much less meaningful as a measure of our military strength. This truth, like many in the rapidly changing postwar world, has been slow to sink in. We now stockpile raw materials for a big 3-year war instead of a 5-year one.¹⁵

¹⁵ For a discussion of the slowness with which the United States has moved away from the mobilization base concept, see C. J. Hitch and R. N. McKean, "Economics of Defense in the Nuclear Age," ch. 17, Harvard University Press, to be published.

One other response to the Soviet nuclear breakthrough is of importance for its longrun implications. If the Russians could develop the atomic bomb so quickly, perhaps others could also. And by 1952 the British had. But reports of the slowness with which the British program proceeded and the long gap between the British bomb in 1952 and the expected French one in 1960 has indicated either a reluctance on the part of most countries to engage in so fateful an enterprise or the complexity of this technology or, most probably, a combination of both. The period of slow growth of the nuclear club may be nearing an end, however, and the 1960's may see a substantial increase in membership. The significance of this trend is as yet far from clear, but the consequences are not likely to be happy for the United States nor for the rest of the world.

Past Russian advances in nuclear warfare have placed the United States in a radically new situation. We would be part of the battlefield in a big war. The concept of deterring major war now assumed the highest importance in our plans. Our military forces acquired a new and important mission, the defense of North America. Our Strategic Air Command, in the midst of building up a network of overseas bases, had to alter significantly its method of operation abroad, shift toward different types of aircraft, and begin to look to its defense at home. And we had to face the prospect of high peacetime defense budgets into the indefinite future.

The development of thermonuclear weapons and advances in rocketry

Before we had really understood the significance of the beginnings of Russian strategic nuclear airpower, the Soviet Union acquired thermonuclear bombs and modern jet bombers, and then long-range rockets. The problem of constructing an air defense system able to serve as a shield against enemy bombs became immensely more difficult almost as soon as the task was begun. The blast and thermal effects of a 1-megaton yield thermonuclear bomb could destroy or damage the relatively soft structures of a city over an area about 15 times as great as the 20-kiloton fission bomb. And radioactive fallout from a single bomb would be lethal to people not in some type of shelter over an area of several hundred to a thousand or more square miles. The thermonuclear bomb now made possible the destruction of an entire nation, not just its urban areas. A very small number of bombs by the standards of previous wars could produce immense damage against an unsheltered population.¹⁶ The belief that to initiate nuclear war would be suicidal seemed to be warranted by this technological development. It has become very widely held.

The great advance in bomb technology, the hundredfold increase in energy yield from a given weight at essentially no additional cost jumped the offense significantly ahead of air defense. First, for the reason just discussed, the great power of each delivered bomb. Second, it now made rockets more efficient bomb carriers, especially against soft targets, for the fact that they were expected to be less accurate than bombers would be offset by a large warhead yield.

¹⁶ An attack studied for the Joint Committee on Atomic Energy of the Congress in 1959 involved 263 bombs with a total yield of 1,446 megatons detonating within the United States. It was estimated that this attack would cause 50 million deaths plus 20 million serious casualties, and the destruction and damage of about one-half of the homes in the United States. This attack, while not the smallest that might occur, is substantially less than the largest that might be experienced in the 1960's. "Summary Analysis of Hearings on Biological and Environmental Effects of Nuclear War," Joint Committee on Atomic Energy, August 1959.

(The fact that there appears to be no promising method of active defense against ballistic missiles is more significant than it might seem, for although air defense seemed to have fallen behind the offense, in reality it had not been so very far behind.) This advance in rocketry also meant that these powerful bombs could be delivered from Russia or from the oceans so quickly that there might be little or no usable warning of a well-executed surprise attack. The problem of SAC vulnerability both in the United States and on overseas bases did not originate with the thermonuclear bomb and long-range rockets. Old fashioned Russian bombers and kiloton yield bombs were enough to create that threat, although this was not very well understood. However, these new weapons added a new and important dimension, for thermonuclear bombs would not only be delivered by aircraft and ICBM's but also, in the near future, by missiles launched from aircraft and from submerged submarines. The possession of these weapons by the Russians forced us to adopt new methods of protection for our strategic retaliatory forces, while their introduction into our own forces opened up a new range of possible strategic systems.

Paradoxically, the period immediately after the detonation of the first Soviet Union fusion bomb saw the most explicit statement on U.S. intentions to contain Communist expansion through the use of nuclear weapons and the renunciation of the policy of meeting non-nuclear aggression with nonnuclear defense as we had in Korea.¹⁷ This was a period of retrenchment in the defense appropriations, the period of "more bang for a buck," of sizable reductions in our non-nuclear capabilities. Six years after, judging by the composition of our forces, we have not yet retreated very much from this doctrine which stems from the underlying belief that the atom bomb is ours; a belief that is increasingly at variance with the growth of Russian nuclear delivery power. But some changes are underway in response to that growing power. For example, there are signs of growing desire on the part of some of our allies to gain a greater measure of control over NATO's nuclear forces. Whether or not this is a useful or relevant response is another matter to be discussed later.

At home, the additional actions I have mentioned have already been taken to protect our retaliatory force from attack, including blast shelters, missile dispersal, plans for air-mobile bombers and subsea mobile missiles. Their adequacy is as yet uncertain, and undoubtedly announcements of further vulnerability-reducing actions will be forthcoming. In any case, we should not expect that any forthcoming action will enable us to deter war with certainty. Therefore, we will continue to need damage limiting measures. The nature of our response with our damage-limiting forces and in the defenses of overseas areas to these new challenges is uncertain. Finally the threat to our national survival, in the event of a war, is unique, but there is no indication that we will adopt the military and civil defense measures that would be an essential component of an expanded damage-limiting program. On the contrary, it has been announced that we are deferring the procurement of a defense against ballistic missiles and reducing the procurement of some antibomber defenses.

¹⁷ The first Russian fusion bomb was detonated in August of 1953. The doctrine of massive retaliation was announced by Secretary of State Dulles in an address to the Council on Foreign Relations on Jan. 12, 1954.

What the full response of the United States and its allies will be to the latest advances in weaponry for the defense of overseas areas is not yet clear. And very likely our process of adjustment will be disrupted by further revelations of advances in weapons technology, possibly once more by the Russians.

C. THE FUTURE OF GENERAL WAR

While there is a high order of agreement on the four broad objectives discussed above, there is much less agreement on how to attain them. One view is that general war is adequately deterred and that more effort needs to be shifted to limited-war forces. Another is that the threat of allout war has kept the Communist powers from using superior ground strength more freely and that this capability needs strengthening. Or that our most urgent defense problem is the "missile gap," or the need for nonnuclear forces overseas, or for independent nuclear forces in Europe. Underlying these differing positions on our defense policy is a set of doctrines or assumptions about the nature of war that are not always made explicit. These doctrines deserve elucidation. The following discussion is divided into a discussion of alternative views on general thermonuclear war, and then on alternative methods of defense abroad. The distinction is somewhat artificial, for the problem of general war is closely connected with the problem of defense abroad. In fact, most of the stakes are abroad. Nonetheless, the problem of general thermonuclear war is so central and so crucial that it deserves separate discussion.

It is convenient to distinguish five different views toward general thermonuclear war:

1. World annihilation.
2. Mutual suicide.
3. Deterrence-plus-insurance.
4. Extended deterrence.
5. Massive retaliation.

The boundaries of these categories are not sharp, and it is possible to classify views on the problem of general war in other ways. Finally, one position has not been included, the preventive war view. There are few today who would argue that the United States should end the uneasy balance of terror by aggression.¹⁸

The world annihilation view

Not everyone agrees that deterrence through the threat of nuclear retaliation is rational. Many distinguished people, both here and abroad, regard a general thermonuclear war as the ultimate catastrophe, the destruction of civilization, the endangering of the human race itself:

It is impossible to know with any precision what the outcome of a nuclear war would be. Some think that half the population of the world would survive, some think only a quarter, and some think none. It is not necessary, in considering policy, to decide among such possibilities. What is quite certain is that the world which would emerge from a nuclear war would not be such as is desired by either Moscow or Washington. On the most favorable hypothesis, it would consist of destitute populations, maddened by hunger, debilitated by disease, deprived of the support of modern industry and means of transport, incapable of supporting educational institutions, and rapidly sinking to the level

¹⁸ For a discussion of the doctrine of preventive war and its demise see Barnard Brodie, "Strategy in the Missile Age," ch. 7, Princeton University Press, 1959.

of ignorant savages. This, I repeat, is the most optimistic forecast which is in any degree plausible.¹⁹

There is a real possibility that a great nuclear war would change the nature of the pool of human germ plasm in such a way that the human species, as we know it, would not survive.²⁰

It follows from these beliefs that thermonuclear war cannot conceivably be a deliberate instrument of national policy, that this type of war must be abolished. And if the world has not quite reached this situation, others argue that it will soon, and we should now behave as though war were no longer a rational alternative to peace.²¹

Although this view is partly based on the image of a general nuclear war in which the bomb stockpiles of the nations would be hurled indiscriminately at major cities of the world in an orgy of destruction, the grim prophecies quoted are based mostly on the genetic and somatic effects of nuclear radiation from fallout.

The amount of worldwide radiation produced by a thermonuclear war could be sizable in comparison to normal background levels, and any amount of radiation is believed to be harmful genetically. The magnitude of these worldwide effects depends on the total yield of bombs detonated, the proportion of the yield produced by nuclear fission, and the height of burst of the bombs. With ground bursts, about 20 percent of the radioactive material is spread beyond the local fallout area. If we leave aside for the moment the situation in the countries directly attacked and their immediate downwind neighbors that might receive local fallout, the average worldwide radiation received over a generation from a general war that might be fought in the next 5 years or even much later is likely to be about 1 roentgen, with rather more than this in the Northern and less in the Southern Hemisphere.²² This result, which assumes ground bursts, is based on a war in which 5,000 megatons are detonated worldwide, with 2,500 megatons coming from fission. This, in thermonuclear terms, is neither an exceptionally small nor exceptionally large war. A war of this scale would probably increase the proportion of seriously abnormal births in the first generation after the war by about one-tenth of 1 percent; that is, an increase from the present level of about 4 percent to about 4.004 percent, with somewhat smaller increases tapering off over many later generations. In addition to this relatively immediate genetic effect (produced mostly by the fission product cesium 137), there might be a comparable increase in the absolute number of defective births from carbon 14 spread out over thousands of years (carbon 14 has a half life of 5,600 years).

In addition to worldwide genetic problems, there are somatic ones to take into account; for instance, the life-shortening effect of whole-body radiation. On the basis of present knowledge it appears that such a war might shorten life by something like 10 days or less on the average for the population outside of the countries attacked, though the lives of many people would suffer a much greater shortening than this. (Both the genetic and life-shortening effects of this war would be substantially less than those now produced by natural background radiation.) There are other effects: the average con-

¹⁹ Bertrand Russell, "Common Sense and Nuclear Warfare," Simon & Schuster, 1959, p. 42.

²⁰ Linus Pauling, "No More War," Dodd, Mead & Co., 1958, p. 149.

²¹ Eugene Rabinowitch, "Status Quo With a Quid Pro Quo," Bulletin of the Atomic Scientists, September 1959.

²² Joint Committee on Atomic Energy, op. cit.

centration of strontium 90 produced by a war of the size mentioned might come to about one-fourth the level now regarded as tolerable for large populations.

This is a high price to pay for any war. To be sure, these percentage increases for any single generation, including the generation alive at the time of the war, seem small if compared to the usual hazards of life. But these small percentages, multiplied by the large world population, yield over the years an impressive number of people likely to be seriously affected by such a war. For example, a war of this scale might produce one-quarter of a million additional abnormalities in the first postwar generation.

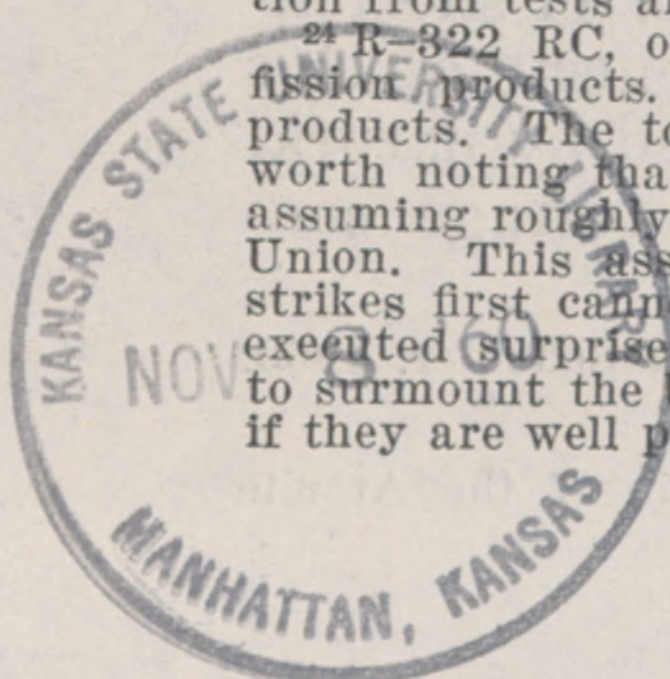
But how can these fallout effects be reasonably regarded as annihilation? The first postwar generation would number over 3 billion births. The great majority of the people in the world would not even notice this aspect of the conflict. This does not mean that there is no problem. On the contrary, governments have an urgent obligation to take this external damage into account in their plans for the weapons systems they buy and in their plans for the conduct of a war just as they have the obligation to weigh the prospective damage to the population of their own countries, their allies, and their enemies.²³ Furthermore, these casualty estimates are not certain. There is always a possibility that some new and more serious worldwide effects of a large nuclear war will be discovered.

It is important to consider very much larger wars than the one illustrated for they may become possible.²⁴ A war with, say, 20 times the fission yield and with all air bursts (increasing worldwide fallout while reducing local) would have worldwide effects about 100 times as great as in the war described. This amount of radiation, about 30 times that from natural sources, is an enormous dose, with really grave, if not quite annihilating, consequences for mankind. But this does not mean that such an immense war is likely within the next decade. *There is little support for the view that the nuclear powers are now planning to procure weapon delivery systems that will inevitably lead to greater and greater worldwide fallout damage.* On the contrary, delivery systems now in development in the United States should lead to a substantial reduction in the worldwide fallout threat. The trend toward small air, ground, and sea mobile systems means that we will be procuring mostly smaller, not larger, warheads in the future. It may well be that the total yield that U.S. forces could deliver with an undamaged strategic force will be very substantially smaller by the mid-1960's than that deliverable at the present time.

On the other hand, we cannot be confident that much more devas-

²³ Governments have an obligation to take radiation damage from peacetime bomb testing into effect also. Two points should be made: first, that while the worldwide radiation from past tests is small in comparison to the war described, it is not trivially so. About 50 megatons of fission products have been distributed widely as compared with the 500 that would be in the illustrative war. Second, that it is possible to eliminate contamination from tests altogether by detonating bombs deep underground or in outer space.

²⁴ R-322 RC, op. cit., treats an attack on the United States with 20,000 megatons of fission products. Pauling, op. cit., considers a war with 50,000 megatons of fission products. The total energy yield in these two cases would be very much greater. It is worth noting that large estimates of the total yield detonated are often a consequence of assuming roughly equivalent amounts detonated in North America, Europe, and the Soviet Union. This assumes something almost certainly contrary to fact; that the side that strikes first cannot drastically reduce the total yield delivered by its opponents. A well-executed surprise attack might leave the defender with a quite small megatonnage able to surmount the barriers to retaliation unless retaliatory forces are well protected. Even if they are well protected, symmetrical damage is not to be expected.



tating weapons will not be developed within the decade. Man's ingenuity in thinking up still more powerful weapons is impressive. The implications of further advances in bomb technology in the direction of weapons that produce the widespread annihilating effects feared and, even without further technological advances, the diffusion of the existing types of nuclear weapons through the world argues for an urgent and systematic search for international measures of control. However, examination of the known effects of a war and current military trends does not support the argument that a general nuclear war in the 1960's would be the ultimate catastrophe. Terrible as the worldwide consequences of a nuclear war would be, it is unwise to assume that governments would be deterred from starting a nuclear war primarily because of these worldwide effects.²⁵ As we shall see below, their calculations may be dominated by even more pressing considerations—including the threat of much greater damage than the worldwide damage discussed in this section. What about the direct consequences of a war for the participants? Are they of a magnitude to rule out war?

The mutual suicide view

The prevailing opinion is that general nuclear war, if it does not destroy the world, will certainly destroy the participants. The list of those who have held this view is a long and distinguished one.²⁶ Some believe that for this reason general nuclear war has been effectively abolished, while others believe that deliberate war has been eliminated and worry only about the chance of an unintended or "accidental" war. They all hold that rational governments would never deliberately choose nuclear war, that it will not be especially difficult to deter a general war. They also do not distinguish levels of damage—damage would be total.

Just what is meant by "suicide," deserves careful attention. There is little question that some extreme level of damage would warrant our use of the word. Retaliation that would inflict 150 million or more fatalities to either the Soviet Union or the United States would certainly qualify. Would 50 million, or 20 million, or 1 million? These would be disasters so far beyond our experience that they might at first glance seem equivalent to total destruction. But most people on reflection would agree that they are not. In the mid-1960's, 50 million fatalities in the United States would mean 150 million survivors. And probably a substantial economic base would survive as well. In addition to grave economic loss, the Soviet Union suffered well over 20 million fatalities during World War II. Judging by the recovery of the Soviet Union since World War II, one cannot say that level of damage was fatal. This does not mean that this experience was one that the Russians would care to repeat. Far from it. It does mean, however, that we must be careful to distinguish between those levels of damage that are a disaster and those that are

²⁵ For a discussion of these matters see Herman Kahn, "Three Lectures on Thermo-nuclear War," to be published by the Princeton University Press.

²⁶ For a discussion and criticism of this set of opinions see Wohlstetter, *op. cit.* A significant number of those who have held this position, once almost universal in the West, have altered it during the past year.

Much of the material in this section and in the following one on deterrence-plus-insurance is based on unpublished material of Albert Wohlstetter and will be discussed at greater length in his forthcoming book for the Council on Foreign Relations.

lethal to a country. This distinction has important implications for our defense policies.

What intensities of attack would produce these different levels of damage? An attack delivering roughly 4,000 megatons could inflict damage in the lethal range if not moderated by civil defense. (The delivery of this weight of attack might require the launching of a much greater weight, and for the side striking second, the possession of even greater forces.) It would probably kill about 120 million people from blast and fallout if they failed to take much advantage of the shielding provided by existing buildings, and at the present public level of understanding of how to behave if we are attacked, this seems to be a reasonable assumption. A very much smaller attack than this could do great, if not necessarily lethal, damage; 50 high-yield bombs totaling about 500 megatons delivered on our largest cities might cause about 30 million fatalities if the populations had not evacuated or sheltered.²⁷ A larger attack could kill practically our entire population.

The vulnerability of the Soviet Union population to a large attack is roughly comparable to that of the United States. Assuming again that there is no civil defense—a much more dubious assumption with regard to Russia—the damage from, say, a 4,000-megaton attack would be comparable to that in the United States. However, damage from a 50-city attack would be substantially less, for Russian industry and urban population is less concentrated than ours.

What level of attack might be expected? It is essential to distinguish between the situation of the aggressor and that of the defender. The aggressor has the advantage of attacking with an undamaged force and possibly by surprise. If his attack were to destroy a large proportion of the defender's force and possibly disrupt the remainder, and if his active defenses were to exact further attrition of the surviving force, then the actual weight of attack delivered by the defender might be small. And much of it might be delivered against the wrong targets. The weight of attack against civil targets might be significantly less than the smaller of the attacks illustrated. Finally, the effect of the defender's delivered attack would depend very much on the aggressor's use of civil defenses. The aggressor can use civil defense to especially good advantage for, in addition to planning on receiving a deduced weight of attack, his population may be able to evacuate cities and seek fallout shelter well before most of the defender's retaliatory attack arrives. It is somewhat disquieting in this connection to observe that the Soviet Union has been carrying out an extensive civil defense training program in which all adults are supposed to have received over 20 hours of instruction.

The risk to the defender's civil society is much greater. It is threatened initially by the aggressor's undamaged strategic force. The aggressor could inflict lethal damage especially if the defender had little civil defense. However, this does not mean that he would necessarily want to do so or that his attack would be unconstrained.

²⁷ The destruction of our 50 largest metropolitan areas by an attack of this scale would leave the bulk of our population surviving and a sizable and relatively well-balanced economic base. In the absence of civil defense preparations, including detailed plans for reorganizing and controlling the economy in the immediate postwar period, disruption to that had survived the immediate efforts of the nuclear attack. Arranging for the distribution of food is an obviously critical task whose accomplishment calls for extensive pre-attack planning.

If he wished to take his enemy by surprise and if he wished to retain forces in being, his initial strike might have to be quite limited in size. And it would have to be sent largely against the defender's military forces if damage were to be reduced to his own cities and remaining military forces. The weight of attack sent directly at the defender's population centers might be only a small part of the total, and the aggressor might choose not to attack population directly at all. Where military forces and populations are close together, a purely military attack against an unprepared population would almost certainly do great civilian damage.²⁸

Even for the defender, population damage could be drastically reduced over a wide range of attacks by civil defense. Relatively cheap measures (well under a billion dollars a year) could make a big difference. The difference between having an unprepared population and one trained to use available structures as fallout shelter, equipped with radiation meters, provided with emergency food supplies, and trained in decontamination techniques, could reduce fatalities by perhaps 50 million.²⁹ With special fallout shelters it might be possible to reduce fatalities from a large attack by perhaps a comparable amount in addition. Beyond this, we might build blast shelters, arrange for the evacuation of the population of cities to rural shelter areas in a crisis, plan on the use of nonurban industry and adopt other measures to promote postwar recovery. A large scale program of civil defense might be as large as \$5 to \$10 billion or more a year, a tremendous amount compared with present civil defense expenditures but not, it should be noted, compared to our defense budget nor even to the amount we are now spending on our general war objectives.

Even allowing for civil defense preparations, the long-term radiation effects discussed above would be greatly intensified in any heavily attacked country if ground bursts were used. The survivors of the war might average a long-term radiation dose of 200 or 300 roentgens, and many would receive much more. This is 50 to 100 times as much as they would get from natural sources. It would increase the proportion of seriously defective children born from about 4 percent to about 5 percent of the total, and the resulting concentration of strontium 90 in bones would produce a large increase in the incidence of leukemia and cancer. The lives of the survivors might be shortened by an average of 5 to 10 years. And there would be other serious medical and environmental problems as well.

In spite of such unprecedented problems, this does not mean that economic recovery is impossible even following a heavy attack. If a large population were to survive through protective measures, with the economic resources surviving outside of major cities, and with

²⁸ A comparative study of the vulnerability of the United States and the Soviet Union population to fallout showed that if these populations had no civil defense preparations, an attack using ground bursts only on military airbases could cause a very high casualty level; for example, a 4,000-megaton attack might kill 40 percent or more of the population of either country. "The Distribution and Effect of Fallout in Large Nuclear-Weapons Campaigns," Hugh Everett III and George E. Pugh, "Operations Research," vol. 7, No. 2, March-April 1959. However, most of the essential elements on an airbase are soft and soft targets are more easily destroyed with air bursts. The same attack using air bursts would probably kill perhaps 2 or 3 percent of the population of either country. Even with ground bursts, fallout fatalities could be greatly reduced by intelligent use of existing structures by a trained population. The article referred to does not take this into account.

²⁹ Herman Kahn, "How Many Can Be Saved," Bulletin of the Atomic Scientists, January 1959.

careful preattack planning to help us get through the initial period of disruption, recovery would seem to be possible. About one-third of the population of the United States and about half of the manufacturing capital of the United States is located in our 50 largest metropolitan areas. This is much of the United States, and most people think of the survival of the United States in terms of what might happen to these metropolitan areas. Conversely, two-thirds of the population and about half of the manufacturing industry of the country lie outside of these areas. (The comparable figures for the Soviet Union are about four-fifths of the population and six-tenths of manufacturing industry outside of the 50 largest cities.) Half of our population and one-third of manufacturing are outside of the 150 largest urban areas. According to one informed optimistic estimate it might even be possible to restore something like the pre-war consumption standard for the survivors in 10 years or so after an attack which had destroyed our 50 largest metropolitan areas.³⁰

In sum: (1) An attack delivered on the 50 largest cities of the United States, in the absence of civil defenses, and if the population of these cities were to be found there at the time of the attack, would kill perhaps 30 to 40 million people. (2) This damage, while indeed catastrophic, would not be lethal—the Nation could in time recover, especially if plans for getting through the initial period of disruption had been made. (3) If the population of these cities were to be evacuated and sheltered they would be much less vulnerable, but an attack on the cities would still do great material damage. (4) A larger attack of, say, several thousand megatons, could kill over half of an unprotected population mostly from radioactive fallout (damage almost as great would result from a purely military attack against air-bases). (5) This scale of attack need not be lethal if modest civil defense preparations (fallout protection and recovery) have been made; though larger attacks are possible so are larger civil defense programs. (6) The vulnerability of the Soviet Union to a given weight of attack delivered on target is somewhat lower than that of the United States but roughly of the same order of magnitude. However, the combination of a civil defense program combined with the threat that the Soviet Union might strike first could give that country an advantage we would do well not to depreciate.

Suicide, in the literal sense, is not the automatic consequence of a nuclear war. What does all this tell us about the problem of deterring general war? Presumably the assurance of damage substantially less than lethal would deter a nation from choosing war rather than peace. The amount of damage that might be risked in order to achieve certain gains or avoid losses is highly uncertain. Against a rational opponent the amount of damage one need threaten depends on the alternatives open to him. The risk of losing even a few cities, even if their inhabitants had been evacuated, might serve to deter general war in all crisis situations arising in the next decade. If competitive coexistence continues to offer a hopeful prospect for the Soviet Union, the threat of relatively little damage should deter its first strike. However, if its prospects turn out at some point to be grim the threatened damage necessary may be quite high. Since we cannot be very sure of the Soviet assessment of the alternatives, we want to be capable

³⁰ See R322-RC, *op. cit.*

of threatening heavy damage, say, large in comparison to that suffered in World War II, for however traumatic that war was for the Russian people, the Communist state survived and has gone on to new heights of power and influence. (A major difference between World War II and world war III would be in the length of time during which the damage accumulated. Damage to Russia in World War II occurred over a 4-year span. A future general nuclear war is more likely to see damage occurring over that many days or weeks. The shock and disruptive effect, and the deterrent effect of comparable absolute levels of damage is often believed to be greater in the time-compressed situation.) Finally, the threat of quite heavy damage might not be enough to deter a dictator as irrational as Hitler, if one were to come into power and have access to nuclear weapons. In any case, the options both sides face will be more complicated than the simple choice between war and peace. Most importantly, it includes the threat of being hit first. However awful the consequences of starting a general nuclear war, the consequences of being hit first are even worse.

One view on this question can be summarily disposed of. It is that a nation would be deterred from an attack by the consequences of its own fallout coming back to its own territory, the "lashback" effect. If it is believed likely to deter the Soviet Union from an attack on so distant a country as the United States, the relevant fallout effects are those common to midlatitudes in the Northern Hemisphere. But these effects are certain to be swamped by the direct effect of even a small nuclear retaliation against the initiating country. If advocates of the "lashback" view of deterrence hold that there will be no retaliation and that the only damage the aggressor would receive is fallout from his own bombs, then they have an exceptionally gloomy view of the strike-second ability of strategic forces and an optimistic view of the deterrent effect of low levels of radiation. As for "lashback" from an attack on closer neighbors, for example, a Russian attack on Western Europe, local fallout could be reduced by airbursts, and in any case most of the local fallout produced would land short of the Soviet Union.

The mutual-suicide view implies a policy position on general war which can be described as deterrence only, for if all possible war outcomes are indistinguishably the ultimate catastrophe, there can be no other objective than deterrence. The possibility of limiting damage is denied.

There is much about American attitudes toward general war and even about our defense posture that suggests, in spite of our expenditures, for example, on air defense, that the deterrence only doctrine is the prevailing one in this country. This hypothesis finds support, to choose two examples, in the absence of a serious civil defense program and in the practically universal tendency in public discussion of defense, in scholarly writings on military affairs, and in testimony before the Congress, to avoid reference to the possible conduct of a general war and to its outcome.

Britain, whose position is more exposed than ours, has officially adopted the deterrence only position:

It must be frankly recognized that there is at present no means of providing adequate protection for the people of this country against the consequences of an attack with nuclear weapons. * * *

This makes it more than ever clear that the overriding consideration in all military planning must be to prevent war rather than to prepare for it.³¹

Consistent with this policy, Britain has abandoned air defense, except for the protection of its bomber bases, and has not adopted a civil defense program.

While everyone must agree that the prevention of all-out war is a task of the most urgent and crucial importance, the belief that "the overriding consideration * * * must be to prevent war rather than to prepare for it" has some important ramifications: First, as in Britain, it would seem that we could save money on damage-limiting forces such as air defense. Next, it suggests that we need not really "prepare" for war. It is enough to look threatening, to put up a convincing facade—but the facade must really be convincing. Third, to some it suggests that we should not only have a formidable strategic power but also that we should foreclose alternatives to all-out retaliation, i.e., that we should put ourselves in the position where our power to vacillate or to back out in a crisis would be limited. We might do this by being prepared effectively for only one kind of all-out war, or by expecting that the commitment of forces to battle would, after a certain point in a crisis, prove inexorable. Fourth, it suggests the adoption of terror weapons, for example, the delivery of massive amounts of radioactive fallout in the hope—that might be unfounded—that they might combine cheapness with great effectiveness. To repeat, all this in the belief that these weapons would not have to be used.

Adherence to the deterrence only doctrine tells nothing in itself of the level of damage believed adequate to deter or the forces needed to assure that level. Opinion on these questions range from those who hold that the possession of a few bombs is enough (they neglect the problem of delivering them) to those who believe that the delivery of a lethal weight of attack is needed.

One variant of the deterrence only view is of particular interest.³² It has come to be known as finite or minimum deterrence. There are two senses in which the concept of "minimum" deterrence is used. One refers to the almost universal view that we should not put more resources into deterring general war than seems to be needed, allowing for uncertainty and possible surprises. The other is a position on force composition and strategy. It holds that we should unilaterally reduce our general war capability: Reduce our active defenses, continue not spending money on civil defense, and limit our strategic offensive force to a level large enough to assure only the destruction of some number, possibly fairly small, of enemy cities.³³ We should not prepare to strike back at the enemy's offensive force (attack military targets), in part because that force would already have been launched by the time our counterattack could arrive; and in part because preparations for counterforce attack, along with preparations for active and civil defense, make war more likely. This is so

³¹ "Defense: Outline of Future Policy," "White Paper on Defense," London, April 1957.

³² For a critique of the minimum deterrence view see the forthcoming Wohlstetter book, *op. cit.*

³³ The most lucid presentation of the minimum-deterrence doctrine is to be found in George Rathgen's "Deterrence and Defense," *Bulletin of the Atomic Scientists*, vol. XIV, No. 6, June 1958, and in "NATO Strategy: Total War," published in "NATO and American Security," Princeton University Press, 1959. See also, "Finite Deterrence, Controlled Retaliation," by Comdr. P. H. Backus, USN, in "United States Naval Institute Proceedings," March 1959.

because we would be more tempted to attack in a crisis and the Soviets would, as a result, be more tempted to strike us. Moreover, this more modest posture would help to save money that might be better spent on limited-war forces.

The minimum-deterrence theorists recognize two very important truths: First, that it is not necessary to promise total destruction of a country in order to deter it from aggressive acts. Beyond a certain level of threatened destruction there is little additional deterrent value to additional damage increments. Second, that the strategic balance is not a stable one—that it is important to try to stabilize it by our policy choices.

While these truths are important and should receive urgent consideration in our defense planning, there are some important limitations to this doctrine. It would be highly risky for us to assume that levels of damage from which recovery might be rapid would be enough. The damage levels proposed by some minimum-deterrence advocates are not large compared to historic levels of damage from which rapid recovery has occurred. Above all, it is important to recognize the great effect of an enemy initial thermonuclear assault and the difficulty of delivering a retaliatory blow. The damage a minimum-deterrence force might actually manage could turn out to be much less than expected in advance.

Next, would we really have no military targets to hit if we were to strike second? This is by no means certain. The enemy probably would not send all or necessarily a majority of his forces in an initial attack, for to do so would not only increase the chance of our getting warning, but it would mean using up all of his military force. He would surely want to reserve part of it for the conduct of the war, short as it might be, and to end the war. Both during the war and at the end he would have to consider his military position vis-a-vis the rest of the world. Moreover, his attack might be badly executed, and a badly executed attack would give us the opportunity not only to save more of our own force but also to damage more of his.

Third, our threat of initiating general war in the defense of vital areas has been and remains an important element in their defense, and its reduction or effective elimination would make their defense more difficult, possibly very much more so. This does not mean that we need continue to depend so much on this type of defense, but the implications of its abandonment must be understood.

Finally, there is the deepest objection to this position and to the entire mutual-suicide set of views. They are essentially based on the idea that both sides will inevitably direct a great weight of attack against civil targets in a general war, that if the United States is attacked, our cities will be destroyed, and we in turn will retaliate heavily against enemy cities. The minimum-deterrence advocates go further and insist that we should try to design our forces for use only against cities. But what would the execution of this threat accomplish? What U.S. national objective would be advanced? It might serve as a lesson to future aggressors or provide a horrible example to shock the world into total disarmament. But the chance of this hardly seems worth enough to warrant the sacrificing of much of the United States and possibly all of it. The dilemma of a policy of

large-scale retaliation against enemy cities is that what it makes sense to threaten is not necessarily the best policy actually to execute. Representative Holifield expressed this dilemma as follows:

When 72 million people are killed, when 71 cities are wiped out, when that terrible havoc hits the Nation, I will ask you, what could we do to retaliate and what good would it be? * * * a policy of massive retaliation after attack is a completely fallacious doctrine.³⁴

Just how inevitable is it that a general war would in fact be conducted in this manner? Almost certainly the primary purpose of the side that strikes first would be to destroy the military power of the other. Our strategic force is the target of highest priority at the outset of such a war. How much of the aggressor's force would be available for use against our cities would depend on the ability of our strategic force to "soak up" his attack. We plan on having a well-protected force and such a force, by definition, is able to withstand the entire weight of the enemy assault and survive. The aggressor might save little for use against cities. Might not both sides have an incentive to avoid cities? The aggressor might attempt to minimize the defender's civil damage in order to hold his cities as hostage and to force a quick end to the war. How about the side that strikes second? Suppose its cities are not attacked initially? If it carries out a policy of only city attack with its surviving forces, it may be condemning its own cities to destruction. Moreover, it is feasible to avoid most cities. Clean weapons can be used instead of dirty ones, airbursts against soft targets rather than ground bursts, relatively small-yield weapons rather than very large. If the surviving force were a minimum-deterrence force designed to be just large enough to assure unacceptable civil damage to the enemy, how credible would its deterrent strength look in this situation. If the war were to begin in a favorable way for the defender, if it managed to have a large part of its force available, a policy of hitting only civil targets would give up the prospect of a favorable military outcome. And the prospect of civil damage is not the only deterrent. The aggressor is not as likely to start a war if it appears he stands a good chance of losing it—as well as receiving some civil damage.

At best, general nuclear war seems to offer a terrible prospect—a prospect so awful that the common view that it is no longer a rational instrument of policy seems warranted. But even if the mutual suicide outcome were to be generally accepted, this acceptance would not necessarily rule out the continued use of the general war threat in support of diplomatic positions, for if there were to remain even a small probability of so large a catastrophe, this threat might have a major influence on foreign policy. Moreover, the mutual suicide view is usually based on particular beliefs about the actual conduct and outcome of a war which are crucial and which cannot be assumed a priori. It is necessary to consider the actual forces, circumstances of war outbreak, the information (and misinformation) likely to be available to political and military leaders, and the performance of weapons, including those that might be revealed for the first time on the day of the war. While sensible policies may reduce the likelihood of general war to a quite low value, it seems unlikely that its probability can be reduced to anything like zero. This is so because there

³⁴ The Congressional Record, July 15, 1959, p. 12304.

may be some residual possibility of a deliberate attack, and, perhaps more importantly, because we must always continue to fear an irrational attack. These considerations argue for something more than minimum deterrence and for more than a policy of deterrence only.

The deterrence-plus-insurance view

This view is that a good deterrent posture against all-out war is difficult to attain, that it is possible to distinguish among different possible outcomes of a general war and, in particular, that it is not inevitable that a general nuclear war would lethally damage any of the participants. It holds also that the actual outcome would depend very much on the preparations of the contenders, circumstances of the outbreak of war, their war objectives, and the actual conduct of the war; that deterrence should not be measured only by the threatened civil damage to the enemy, but also by the prospective military outcome. On the other hand, it should be distinguished from the following views described in this section: It does not place primary reliance for the defense of any very large part of the world on the threat of general war. Rather it advocates the building up of more limited capabilities for that objective.

It recognizes that a war might begin other than with a well-designed surprise attack, but hastily, or in a badly executed way, or after a period of warning, or by a gradual escalation from a limited war. And although a general nuclear war would be extremely short, it would undoubtedly consist of more than the exchange of intercontinental missiles in one or a few salvos. Finally, it recognizes that while a sensibly designed program to deter war can very likely reduce its probability to a quite low value, it cannot reduce it to zero.

For all these reasons, it includes insurance as well as deterrence capabilities, insurance in the form of such damage-limiting measures as active and passive defense and forces designed to attack the enemy's military forces. And, especially, insurance in the form of the capability to fight a nuclear war in a controlled fashion. Carrying out this last objective presents a great opportunity and a great risk. It presents the opportunity of an enormous reduction in our losses in the event of war. The risks stem from the possibility that in an attempt to fight a carefully controlled campaign we might waste much of our force on targets of little value. It also suggests another type of preparation—the ability to communicate with the enemy during the campaign.³⁵ Whether this could actually be done in a general nuclear war is quite uncertain.

It might seem that this view is excessively concerned over the problem of retaliation given the fact that so few delivered bombs would do such great damage and given the uncertainties and risk in the execution of a successful first strike. If the choice were the simple one of war or peace, eliminating war might not seem to be exceptionally difficult. As long as the issue is one of comparing what happens to a country's interests if it does not defend them by attacking, with what happens if it does, then the elements in the comparison are the stake in third areas (for geographic reasons our interests likely to be threatened are abroad) versus the risk of population, in-

³⁵ See T. C. Schelling, "Surprise Attack and Disarmament," published in "NATO and American Security," Ed., Princeton University Press, 1959.

dustrial, and military losses associated with general war. The same choice would be faced by the other side. Even if both sides were to have strong strategic forces, would this comparison always lead rationally to the election of the nonwar alternative? Not necessarily. This choice would depend on the value attached to the stakes at issue versus the expected war outcome. Communist leaders would do well to proceed cautiously in any plan of aggression against Western Europe since this clearly is an area of the most vital interest to the United States, economically, militarily, and culturally. And we should not assume that the Soviet Union would always prefer to accept any defeat rather than attack the United States.³⁶ Nevertheless, each side might aim at assuring its opponent of a level of civil damage in retaliation great enough to exceed in disutility the most serious external setback foreseeable—by threatening, say, 20 cities or 50 cities; 5 million or 20 million fatalities. There would seem to be few external interests of the nuclear powers worth this much damage. Actually, achieving high levels of damage in retaliation is far from certain, however, although there are many options open to both sides for helping to assure it.

The problem is not this simple however. There is a third possibility, beyond striking first or accepting the loss to one's interests: Being hit first by the enemy and receiving an attack lethal to the Nation. If faced with the Hobson's choice of striking first or striking second, in a crisis the decision might be made to attack.³⁷ If there is a significant advantage to striking first and if I think that he might strike me, and if he thinks that I think that he might attack, then I had better attack.* * *³⁸ In short, a general war might occur without either party to it preferring war to peace, but through the explosive interaction of expectations. This phenomenon lies behind most of the fear of the war that occurs through "miscalculation," and is a part of the motivation of the advocates of minimum deterrence for our trying to reduce our ability to strike first, and also reducing our ability to limit damage in general. That there is a substantial advantage in striking first with surprise in a nuclear war can hardly be doubted. But will this condition continue? Is it simply a matter of a few years until it vanishes as the result of the introduction of more advanced missiles, of sheltered and of sea and airmobile systems? The expected elimination of the first strike advantage is often expressed in terms of the number of missiles it will take striking first to destroy a single enemy missile. It views a war exclusively as a long range duel between the ballistic missiles of the two sides, and moreover, a duel in which missiles shoot only at missiles and not at the opposing systems of control and communications of the two sides. While some long-range missiles would undoubtedly be launched at some other missiles in a war, the interplay of forces would undoubtedly be much more complex than this. Strategic capa-

³⁶ There is an important asymmetry between the Soviet Union and the U.S. first-strike threats. The former may be able to launch an attack between crises when a state of "normalcy" exists. For the United States an actual attack decision would almost certainly have to come in response to some immediate and grave provocation such as the invasion of Western Europe.

³⁷ The choices facing the contenders are not quite as simple as this discussion implies. Even if there does not seem to be the threat of an attack against oneself now, there may be later on. And a significant loss in a third area might seem to bring the threat of a later attack somewhat closer.

³⁸ T. C. Schelling, "The Reciprocal Fear of Surprise Attack," the Rand Corp., paper P-1342, May 28, 1958.

bilities in the 1960's are not likely to be measured very satisfactorily by simply matching missiles salvos against each other.

We must be wary of predicting the course of technology and the actual weapons choice that might be made by both sides. There are some exceptionally difficult problems in assuring a retaliatory capability. Some tasks will very probably get easier, for example, the preservation of several types of mobile vehicle systems such as the Polaris submarine and its missiles, continually airborne missiles, or constantly moving train-borne missiles. However, other tasks may get more difficult, in particular that of preserving a protected, reliable system of control and communications. We simply cannot say what, on balance, will be the outcome.

The instability caused by the advantage of the first strike is one of the principal reasons why the minimum-deterrence advocates would have us reduce our damage-limiting capabilities, both offensive and defensive, unilaterally if necessary, since our reducing this capability will lessen the enemy's fear of our attack and therefore lessen his motivation to attack us. On this argument, we want to reduce our countermilitary attack capability while preserving a countercivil attack capability. This view assumes that we can distinguish neatly between countermilitary and countercivil capabilities. There is no doubt that we can do this to some degree, but it is not easy. Most of our offensive weapons are useful against both military forces and cities. A ballistic missile in a submarine, for example, is not only an efficient instrument for attacking cities, it is admirably designed to strike against many military targets; it is efficient in a sudden first strike and in a retaliatory second strike. In short, if we were, in accordance with the minimum-deterrence doctrine, to attempt in any simple fashion to reduce our ability to strike against military targets, we would reduce our ability to strike against civil targets, possibly to a dangerous degree. And some civil targets (e.g., a sheltered population) might be more difficult to hit than some military targets (e.g., unsheltered airbases). However, it is possible to partially compensate for this. Leaving our population entirely unprotected effectively weakens our ability to counter enemy military power, just as would a reduction in our active defense force or our offensive missile force. But the possibilities of compensation work both ways. Just as we can unilaterally reduce our first-strike, countermilitary capabilities, we can increase our strike-second, countercity capabilities by building up our protected retaliatory power. If some U.S. damage-limiting measure appeared to raise appreciably the chance that we might look as though we would be more likely to strike, the compensatory action of an increase in our retaliatory capability should dampen our opponent's incentive to strike us first.

However, the main reason we should not regard damage-limiting measures as seriously destabilizing is that they are not likely to be so successful that they will make very much difference to our behavior. Even with these measures, the prospect of many of our major metropolitan areas destroyed and millions of casualties is a catastrophe so large that our preference for nonwar should be evident to everyone, including the Russians.³⁹

³⁹ Earlier in this paper it was suggested that Soviet civil defenses could significantly increase the threat of a surprise attack, while here it seems that U.S. civil defense is not so likely to. There are two asymmetries which support this argument: First, a

The deterrence-plus-insurance position has three main objectives: (1) It gives great emphasis to the importance and the difficulty of having a secure retaliatory capability and argues that doing this in the 1960's might take more of our resources rather than less. We not only have the problem of protecting our vehicles but also the task of protecting our command and control functions from surprise attack in the face of a growing missile threat and with the promise of still newer weapons coming along. And we must design our future systems so that decision makers will have the right kind of information at critical times. It does not measure deterrence solely in terms of civil damage threatened but holds that the ability to promise both possible military defeat and great civil damage is a better basis for deterrence. (2) It is concerned about the stability of the balance of terror, the danger of a crisis exploding into general war. It argues for weapons systems that do not have to react quickly to ambiguous signs of a possible attack, and for the operation of our forces under protected, or centralized control, with "fail safe" procedures. It recognizes that a situation of stability may come about unilaterally through the development of less vulnerable retaliatory weapons, or through international agreement aimed at this goal. However, it regards a very low level of forces as likely to be less stable than moderately high levels. (3) It favors insurance. It does so because it believes that while the probability of general war can be reduced, it cannot be reduced to zero. It distinguishes between 50 and 150 million possible American deaths. This view calls for insurance in the form of a combination of active and passive defenses and a countermilitary offensive capabilities, and in the form of preparations to fight a general nuclear war in a controlled way that might give the Nation some chance of surviving. To actually fight a general nuclear war in a discriminating fashion would put a great burden on the planning, the equipment, and the emotions of both sides. It is by no means certain that a controlled war could, in fact, be fought.

*The extended-deterrence view*⁴⁰

We have not limited the threat of nuclear retaliation against the Soviet Union solely to an attack on the United States. Our preparations for the defense of Europe have consistently been based on attacking Russia even in the face of nonnuclear aggression. We have, in effect, drawn a line around a substantial part of the world outside of the United States and have said that attack across this line will result in nuclear retaliation just as it would if U.S. territory were to be violated. To be sure, this line has not always been a sharp one. We have not always said that nuclear retaliation would be certain, but that it is possible. We have often tried to face Soviet planners with the risk of general nuclear war if they engage in a certain class of

U.S. first-strike almost certainly would have to come in a crisis in which our allies or the United States itself were threatened. This means that Soviet forces would be on a high state of alert. On the other hand, a Soviet first-strike would not seem to be as constrained in its timing. Second, Communist leaders might be willing to risk much greater damage than Western ones.

⁴⁰ Extended deterrence is short for deterring aggression against the United States and vital areas abroad through the threat of general war. Herman Kahn's corresponding terms, type I and type II deterrence, have the merit of brevity but not of descriptiveness. Some writers refer to the deterrence of attack on one's homeland as passive deterrence and the deterrence of the attack on other areas as active deterrence, the two types of deterrence corresponding to having a second-strike and second-plus-first-strike capability, respectively. However, the term "passive" hardly seems to do justice to the actively complex job of deterring attack on the United States.

peripheral and possibly nonnuclear aggression. Finally we have followed this policy during a period in which the vulnerability of the American people and economy has been growing steadily. Our overt policy has been poorly matched by real capabilities.

The extended-deterrence theory holds that the general war threat against some kinds of aggression short of an attack on the United States is an important bulwark of our defense, in fact, that it is essential; that some parts of the world, Europe especially, are so vital to the United States that we should risk general war in their defense, and that it may not be possible to defend Europe unless we use the threat of general war; that the growth of Russian nuclear capabilities is eroding our deterrence threat and we should work hard at strengthening it by adopting a comprehensive program of civil defense and by strengthening our active defenses and our ability to destroy enemy military targets; finally, that we have to draw the line somewhere, for if we do not, our entire position could be eroded away. Our threat to strike can be made more credible if we plan on using the warning provided by the crisis abroad to evacuate cities and to have our population seek blast and fallout shelters. With a major civil defense program and parallel active defense and offensive measures, fatalities to this country if we were to launch the first nuclear strike (in response to aggression abroad) might be held to several million people even in the face of a large nuclear retaliatory attack (although material damage would remain great). To these direct defenses should be added the indirect ones mentioned, such as the ability of a well-defended strategic force to attract enemy bombs away from our cities. And just as our incentives to carry out a program of pure city retaliation once deterrence has failed may be weak, so may the enemy's. He, like ourselves, may be most interested in limiting damage. Finally, we do not have to commit ourselves with certainty to carry out our threat of general war, we only make it likely enough to dissuade Communist action.⁴¹

The question of resolution in the face of threats is central to the concept of nuclear deterrence and especially to its extension to third areas. Both sides threaten to inflict great damage on the other, damage so severe that neither, if rational, would seem to prefer war to peace. Yet threats of attack are not empty, for even a small chance of so large a catastrophe is of great concern. And the advantage of the first strike, which could lead to the explosive interactions of expectations discussed, may make the probability of war in a crisis uncomfortably high. The side able to move closer to the brink, able to make its threats more convincing, perhaps through feigning irrationality (or actually being irrational), letting things get a little bit out of control, may reap a considerable reward—although at the risk of disaster.⁴²

The Communist powers have several important advantages in such brinkmanship. Apart from the military advantage of the Iron Curtain and their somewhat higher state of civil defense preparation, they have the even greater advantage of totalitarian governments. They can threaten the use of force in a way that is difficult for Western

⁴¹ See Herman Kahn, *op. cit.*; also "The Nature and Feasibility of War and Deterrence," *Stanford Research Institute Journal*, Fourth Quarter, 1959.

⁴² For a fascinating discussion of the profitable uses of madness, see Daniel Ellsberg's Lowell Lectures, "The Art of Coercion: A Study of Threat in Economic Conflict and War," Lowell Institute, Boston, March 1959.

statesmen who have as an audience not only Communist opponents but their constituents and allies. If the will of the West, its leader, or popular support, gives way in the face of pressure, then the Communist powers will make great gains.

The following questions are crucial to this view: Could a program aimed at strengthening our general war posture significantly increase the credibility of our resolve to carry out a threat of general war? Would such a program greatly destabilize the strategic balance? Is a program of the scale envisaged feasible? What alternatives have we for the defense of third areas in any case?

There are serious uncertainties about the effectiveness of such a program. First, the extent to which we might be able to limit the size of the enemy's retaliation would depend on the relative military postures. Here we must face the uncertainty in surmounting the barriers to retaliation discussed earlier, now viewed from the other side. Our ability to put barriers in the way of the enemy's retaliation is formidable, but just as we have, if we work at it, a good prospect of assuring a powerful retaliatory blow, so has he. This is not to say that it is certain that he will in fact adopt the necessary measures. Future technology contains enough surprises to eliminate certainty, quite apart from other obstacles. The actual damage we would receive is uncertain. If he could manage even a modest retaliation against our cities, much damage would be done for they, if not their inhabitants, must remain at risk. Second, the effects of a large nuclear war are not completely understood. The rate at which new medical effects, for example, have been discovered in recent years suggests that there may be others yet to be discovered that will make the problem of civil defense and recovery more difficult than it now appears.⁴³ Third, our program might stimulate the Soviet Union to develop a really massive retaliatory capability that otherwise might not exist. Fourth, even if we were able to protect the United States to a high degree, what would happen to our allies whom we are trying to defend if general war were to occur? It is much more difficult to protect the civil populations abroad, close to the Soviet Union, that would be endangered than it is to protect the American population. If the consequence of a general war were the destruction of our ally, would he be willing for us to use this threat in a crisis? Finally, would such a program be destabilizing? The answer is "Yes." How destabilizing would depend on how massive and successful a program we have. If it appeared that it would leave us able to launch a first strike and get off with little damage, the enemy would have a substantially greater incentive to strike us first. He might feel an overwhelming urge to do so if we were to begin to evacuate the population of our cities to rural shelters in a crisis. But as has been suggested, almost any feasible civil defense program and combinations of forces on both sides is likely to leave us with the prospect of damage so great that we would not feel very ready to initiate thermonuclear war. Even so, extra compensating actions to strengthen our own retaliatory power would undoubtedly be needed to offset the destabilizing effect of a sizable extended deterrence program.

It seems that on balance such a program would increase somewhat the credibility of our present policy. The appearance of resolution

⁴³ This is only one aspect of our advancing understanding. Another is that scientists are discovering means of reducing known damaging effects of radiation.

that a large-scale civil and military program would create would probably give the Russians pause.⁴⁴ It would slow down the rate at which our extended deterrent threat is dwindling. This is not to say that such a program is better than alternative ones, however. It offers little promise of enabling us to hold the line, nor can it turn the clock back even to so recent a period as the early 1950's when the United States could hardly be damaged.

The feasibility of a large civil defense program and expanded active defense and offense programs is not in question. We could support such programs with an increase in tax rates to about the level during the Korean war. However, it is very doubtful that primary reliance for the defense of even vital areas abroad should be placed on this treat. At best a general nuclear war would be a disaster—if not necessarily the ultimate one—not only for ourselves, but also for the Western Europeans we would be attempting to defend. The hazards of general war are so great that we must work hard at interposing defense barriers short of the threat of general war. But to say that we must not use this threat as the primary method of defending third areas is not to say that we can entirely dispense with it. The general war threat is essential if we are to deter attack on the United States; it applies with gradually weakening force as we move outward from our borders. It acts as the sanction to back up our direct defense abroad and to keep limited wars limited, to help put a bound to the erosion of the Western position.

What difference is there between the deterrence-plus-insurance measures and extended-deterrence measures? Both include broadly the same kinds of capabilities, civil and active defense and countermilitary capabilities. It is mainly the point of view that differs and possibly the scale of effort. The deterrence-plus-insurance view focuses on the possibility that war may occur in spite of our best attempts to avoid it and aims at alleviating the catastrophe. The extended-deterrence doctrine focuses on strengthening our ability to respond to grave provocation by threatening general war. There is an important difference here. Limiting fatalities, say, from 150 million to 50 million means not only 100 million lives saved but the difference between having a United States afterward and not having it. On the other hand, being able to limit damage to the much lower levels needed to make a strike-first threat adequately credible would be much more difficult, costly, and uncertain; and risky.

The massive retaliation view

“Massive retaliation” is a loosely used expression.⁴⁵ In its origin, it was the doctrine of responding to a wide range of Communist aggressions by threat of nuclear attack. It was announced by Secretary Dulles in a notable speech in January 1954, in which he said that the administration had decided “to depend primarily upon a great

⁴⁴ It might also give our citizenry and that of our allies pause if they were to interpret such a program as increasing the probability of war.

⁴⁵ It is often used to describe the kind of retaliation we would inflict on the Soviet Union if the United States were to be attacked directly, or if there were to be a major attack in Europe. However, as a label for a doctrine, it is most closely associated with the view that we would use the direct threat of general war, or if any military response which would carry with it a substantial likelihood of general war, in defense of a wide range of peripheral areas. This is the use of the term here. It is by no means clear that many users of this term have had in mind the initiation of a general nuclear war. Secretary Dulles referred at times to a limited nuclear attack against selected industrial targets in China.

capacity to retaliate instantly by means and at places of our own choosing." Shortly afterward, Dulles backed off from his position a bit, and there have been many statements since then to indicate that we would not use this threat indiscriminately. Moreover, we soon gave evidence of our caution by our restrained behavior in the Indo-chinese crisis in the spring of 1954. Nevertheless, the fact that our military capability to defend ourselves locally has been reduced, especially our nonnuclear capabilities, suggests that this doctrine retains much support.

This doctrine looks for support in the belief that the West is unable to stand up against Communist ground strength, that we must depend on the large-scale use of nuclear weapons against the Soviet Union or China in defense of most of our allies around the periphery. If by massive retaliation we mean large-scale nuclear attack on the Chinese or Soviet Union homeland, then this means launching a general nuclear war. If we mean a limited nuclear attack, this means that we are near to all-out war and, for some time to come, the best way to enter such a war if it seems imminent is to launch a strong attack on enemy military forces first, to strike a strong first blow, and not to attack other targets while the enemy prepares to hit us in return.⁴⁶ But this threat raises the same set of problems just discussed. This is the problem of the stability of the balance of terror once again.⁴⁷

The limitations of this doctrine are those of the extended-deterrence view already discussed, intensified by the application of the general war threat to the defense of less vital areas. These limitations have been pointed out by many writers on military affairs.⁴⁸ The essential point is that the threat to use nuclear weapons is not one-sided and has not been for some time. It may not be credible that we would risk all-out war for many peripheral areas with all that that implies for the survival of the United States. If we depend too exclusively on this threat, the Communists will have great freedom of operation in the large area below the threshold of our general war response. While we could increase the credibility of our massive retaliation threat somewhat by adopting the extended-deterrence measures described and by clearly showing resolution, that this policy would work to stop all peripheral aggression is doubtful in the extreme. And if every peripheral challenge beyond the smallest were to raise the threat of general war in any serious way, the cumulative probability of the big war happening could reach intolerable proportions in the next decade.⁴⁹ In sum, if our general war

⁴⁶ It might seem unlikely that a nuclear attack on China would lead to a Soviet retaliation, but the United States might look quite dangerous to the Soviet Union at that point, and the consequences of a Soviet decision not to stand by China would be grave. One possibility is the sharing of bombs and delivery systems with China.

⁴⁷ If both sides have well-protected forces able to retaliate with high confidence, the strategic balance may be stable enough to allow levels of violence that would today seem highly likely to set off general war. It might even be possible to hit homelands without triggering an all-out response. This would really have to be a controlled war. See Morton A. Kaplan, "The Strategy of Limited Retaliation," Policy Memorandum No. 19 of the Center of International Studies, Princeton, 1959.

⁴⁸ Perhaps the most telling critics have been Bernard Brodie, "Unlimited Weapons and Limited War," *the Reporter*, Nov. 18, 1954. Brodie has also discussed this subject in his book, "Strategy in the Missile Age," *op. cit.* Also, William Kaufmann, "The Requirements of Deterrence," in "Military Policy and National Security," W. W. Kaufmann, ed., Princeton University Press, 1956; and Henry Kissinger, "Nuclear Weapons and Foreign Policy," Harpers, 1957.

⁴⁹ A counterargument deserves mention. It holds that actual conflict at the periphery of limited war carries with it a significant probability of turning into a big war. A policy which could lead to a series of limited wars might, it is argued, have a higher overall cumulative probability of a big war than the policy which aims at deterring all wars through the general war threat.

threat retains some validity in the defense of so vital an area as Europe, it retains much less for other regions of the world, and the direction in which the power balance is shifting clearly works to diminish it throughout.

D. THE DIRECT DEFENSE OF PERIPHERAL AREAS

The essential complement to an ability to deter and to wage general war is to be able to use less than all-out military force. And if the growth of Soviet nuclear strength and advances in weapons technology is making the general war problem more difficult for us in some crucial respects, this growth is also making the problem of direct defense overseas more difficult, while at the same time the diminishing deterrent value of our general war threat is making methods of direct defense abroad of increasing importance.

The principal views to be found on the direct defense of third areas are as follows:

1. Dependence on limited tactical nuclear forces.
2. Establishment of independent nuclear forces.
3. Use of nonnuclear forces.

In considering the range of alternative policies for defense abroad, it is important to keep in mind the very different geographical, military, and political situations of the countries we are helping to defend. Some have a relatively strong defensive situation, while others are relatively exposed to ground attack; some are able to support sizable military forces, while many must receive defense support from outside. We need not fix the method of defense appropriate for a given region. It is important not to do so. The range of possible threats is wide and so must be the range of our defenses, and it is possible, in principle, to advocate all three types of defense without being inconsistent. There is a serious practical problem, however, for governments have a powerful tendency to look for panaceas, especially those that seem to promise lower defense budgets, and in direct defense as well as indirect, there is a general tendency to regard nuclear weapons used in some form as the preferred solution.

Dependence on tactical nuclear forces

The belief that the United States could not afford to contain Communist aggression through the threat of massive retaliation, combined with the belief that the West could not contain Communist aggression with conventional force alone, has led to a search for a middle ground, an intermediate level of defense that would combine the virtues of effectiveness, credibility, and low cost. In the early 1950's it became clear to some scientists that small atomic bombs could find a use on the battlefield and that this might greatly strengthen our European defenses.⁵⁰ The growing availability of small atomic bombs along with budget pressures led to a partial substitution of nuclear weapons for conventional arms abroad. The proposed solution has been preparation for limited nuclear war.⁵¹

The policy seemed to have several important advantages. It interposed a level of defense between nonnuclear defenses believed to be

⁵⁰ Project Vista, a study of the use of small atomic bombs was carried out in 1951. See the Transcript of Hearing on J. R. Oppenheimer, AEC, 1954.

⁵¹ See "On Limiting Atomic War." Royal Institute of International Affairs, London, 1956; and Henry Kissinger, "Nuclear Weapons and Foreign Policy," Harper, 1957.

relatively ineffective in any case, and the threat of general war. It gave us "graduated deterrence." Next, it promised to be an effective method of defense. Nuclear weapons could have a devastating effect on enemy armies, airfields, lines of supply. Finally, it promised to give us local defense at moderate cost. Atomic weapons were substituted for expensive men and equipment. Relatively few aircraft or guided missiles need to detonate over target in order to deliver a crushing weight of attack on the battlefield. Even a very small nuclear weapon is much more efficient in destructive power per pound of delivered payload than conventional high explosive weapons.

The principal drawback to this policy is one that it shares with massive retaliation. It assumes that nuclear weapons favor us, even that we could use nuclear weapons unilaterally in a limited war. There seems to be no basis for assuming this in a war with the Soviet Union in the 1960's and little for assuming it vis-a-vis China for all of the 1960's. This is not to say that the limited nuclear war policy has been without effect. Up to now and for some time to come, our nuclear threat may carry a good deal of weight, especially in Peking. It may well be that the relatively restrained behavior of the Communist powers since the end of the Korean war is due in part to our nuclear threats. Khrushchev knows quite well, however, how to make nuclear threats, and his power to do so is increasing. The danger of depending exclusively on limited nuclear war is that we may be deterred from using these weapons in a crisis, that they might be used first by the enemy, and that, apart from who uses them first, the war may not remain limited.

There are other disadvantages. There is the problem of bystander damage. Many targets usually regarded as military—airfields, bridges, rail junctions—are near or in cities. A large tactical nuclear war in Europe might produce quite heavy casualties.⁵² And the trend toward further distribution of bombs throughout Europe is increasing the probable level of bystander casualties if a European war occurs. If both sides are dug in and attempt to blast each other out with large yield weapons, population damage from fallout might be enormous. While a nuclear war on the periphery might be limited from the point of view of the United States, it might not seem to be very limited to the local participants. After one such war, we might find few candidates willing to be defended in this manner again.

Second, meaningful limitations in a nuclear war would include an impressive set of items on which some form of agreement would be needed: yield of weapons, height of burst (to reduce local fallout), specification of legitimate types of target, overall geographical limit to the war and, not least, the total number of weapons to be used. To be sure, explicit agreement might not be necessary since both sides might feel their way tacitly to some common ground even for so complex a set of restrictions. Perhaps the least unpromising of the types of limitations agreement on which both sides might converge is for each side to restrict its use of nuclear weapons to its own territory.

⁵² The possible extent of bystander damage in a nuclear war in Europe was first made clear to Europeans in the celebrated 1955 NATO Exercise Carte Blanche. In this exercise, one without restrictions, 335 simulated atomic bombs were used in 48 hours and it was estimated that 5 million Germans would have been killed and injured. See "On NATO Strategy," by Roger Hilsman in "Military Policy Papers," Washington Center of Foreign Policy Research, 1958, p. 3.

However, there undoubtedly would at best be serious problems in keeping to limitations and monitoring them, especially in the conditions likely to accompany the detonation of very many atomic weapons. It is doubtful that a limited nuclear war would be anything but chaotic in spite of attempts to adapt ground, air and naval forces to its conditions. If limitations are hard to impose and to monitor, such a war might slowly, or more likely explosively, turn into general thermonuclear war. Moreover, while it is possible for nuclear weapons to be used by both sides in such a strictly limited fashion that civilian casualties can be kept negligible—for example only in air defense and at sea—such limited use is not likely to be very effective in holding off a more powerful aggressor.

Third, there has been much discussion on the relative advantage of nuclear weapons to the Communist powers versus the West. Much of this discussion has centered on such questions as the comparative nonnuclear strengths of East and West, the relative size of the atomic stockpiles, the need of the aggressor to concentrate to forces and hence present an attractive nuclear target, the vulnerability of the logistic system stretching across Europe and the North Atlantic to nuclear attack, and like matters. However, the great power of these weapons suggests that the issue of relative advantage may well be settled fairly simply; the side that uses these weapons first in the conflict may gain a great advantage and may win handily in the theater—at that level of violence. It pays to get in the first blow in a limited nuclear war just as in a big one. If we announce that we will use these weapons in response to nonnuclear aggression, then the enemy has a considerable incentive to strike first with them against our airfields and troop concentrations, possible by surprise. Whether or not our position could be retrieved would depend on our initial vulnerability, the weight of the initial attack, the role of sanctuary areas, and our willingness to expand the conflict. To be sure there is a good chance that a sudden Russian nuclear attack in Europe would be interpreted as part of a worldwide attack on our power to retaliate and, if so, this would trigger a general retaliatory attack by us. (This suggests that one way of helping to deter such a Russian assault is to retain U.S. nuclear forces in Europe so that it would prove impossible to attack Western European forces without attacking U.S. forces as well.) But the main argument for limited nuclear war is that we should try to defend locally and not resort to all-out war. To the extent that a tactical nuclear war would seem to lead to general war, there would be an incentive to preempt, to strike the first blow before being struck.⁵³

To hold that a policy of relying on limited nuclear war is not necessarily advantageous to the West does not mean that we can do without this capability. It might be advantageous to fight this kind of a war. And the choice, after all, may not be ours. For many reasons there is a good chance that the next decade will see some nuclear weapons

⁵³ Lincoln Gordon advocates a variant of the limited nuclear war position for European defense. He would have NATO forces deal with low order attacks without the use of nuclear weapons. A large nonnuclear attack should be stopped with tactical nuclear weapons. And a large nuclear attack with all-out retaliation. Except for the response to a small attack, this is a policy of stepping up the level of violence posed by the opponent. But this seems to come back to the view that the bomb is ours, that if we threaten to step up the level of violence, he cannot or will be deterred from doing so. See his "NATO in the Nuclear Age," the Yale Review, March 1959, p. 321. For a criticism of this view and a further discussion of the problems of defense in Europe, see Malcolm Hoag, "What interdependence for NATO," the Rand Corp., paper P-1748, July 13, 1959.

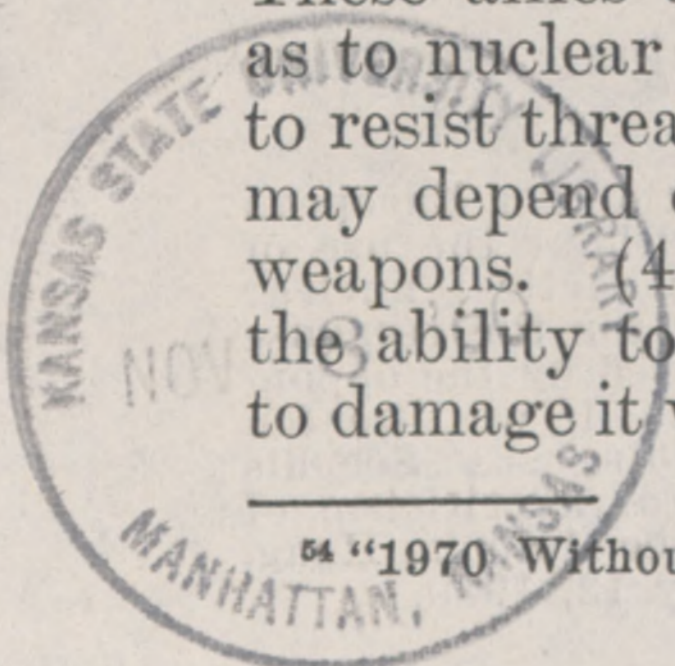
used in anger somewhere, and we might want badly at that point some kind of capability short of all-out war. Just what kind this calls for seems hard to determine. We have been trying to design theater forces for a dual capability: to be able to fight a nuclear or nonnuclear war. But the shift has been more toward the accommodation of weapons for a nuclear war at the expense of nonnuclear capabilities; e.g., the procurement of tactical aircraft designed more for the delivery of nuclear weapons than for iron bombs, and expensive surface-to-surface missiles for use with ground forces of little or no value unless these missiles carry nuclear warheads. It would seem, however, that the answer does not lie in the direction of larger and increasingly nuclear theater forces that more and more take on the aspect of small strategic air forces—with the disadvantage of close and cramped space. To build up these forces in Europe is rather like planning to play “quick draw” in the confines of a telephone booth.

The establishment of independent nuclear forces

The 1960's may see the addition of several, perhaps many, new members to the nuclear club. France intends to explode its first bomb early in 1960, and it has been estimated that perhaps a dozen additional countries are now in the position to carry forward a program leading to the development of atomic bombs by the mid- and late-1960's.⁵⁴ Quite apart from the growth of independent capabilities, the United States has been moving in the direction of sharing some information on atomic weapons and some control over these weapons with our NATO allies. Our IRBM's in Britain, for example, will be under the joint control of British and United States forces. Other European forces are being prepared for the delivery of tactical nuclear weapons. In all such cases the warheads are to remain in some form of American control. One view of the defense of Europe is that the growth of some variety of independent nuclear capability in Europe is important, perhaps essential for European defense and that the United States should assist in this growth.

The motives which have led Britain and France to develop their own bombs and which may appeal to others in their wake are that their defense would rest on a more secure basis if it were based on bombs under their own control rather than on the willingness of the United States to come to their defense, the notion that if they possess bombs they could have more influence on the United States and within the NATO alliance, and considerations of national prestige. We could hardly be expected to share much enthusiasm for the latter two motives, but what about the first one? The main argument for independent nuclear capabilities can be summarized as follows: (1) The growth of Soviet nuclear capabilities is reducing the power of the United States to defend its allies by the threat of general war. (2) These allies are exposed to powerful Soviet ground forces as well as to nuclear attack or the threat of such attack. (3) Their ability to resist threats or actual aggression will be greatly strengthened and may depend critically on their ability to employ their own nuclear weapons. (4) It is not necessary for a small nuclear power to possess the ability to defeat the Soviet Union in a nuclear war; the ability to damage it will be enough to deter. (5) Such a development would

⁵⁴ “1970 Without Arms Control,” National Planning Association, May 1958.



limit the need for the United States to commit itself to a policy of threatening general war. Finally, (6) independent development is inevitable anyway and we should aid our allies to get better weapons while sparing them the burden of bomb and delivery system development and production.

These arguments are not without considerable force, especially (1) and (2). They all deserve close examination, however. An independent nuclear capability able to do some damage to the Soviet Union would undoubtedly give the Soviet Union pause. And so would the actual launching of a nuclear attack even if it promised to be quite successful. But the consequence for a small, meagerly equipped country carrying out its threat against the Soviet Union could be unilateral suicide. Not mutual. The United States will find it difficult enough to provide a reliable second-strike deterrence force in the 1960's; the problem for a small country close to the borders of the Soviet Union is especially formidable. Russian ballistic missiles at these short ranges will be highly accurate and will be able to carry high payloads effective against even blast-sheltered forces. And a nuclear attack against sheltered European forces poses a serious fallout threat to Western Europe and a lesser degree the satellites, although not much to the Soviet Union proper. Any attempt to move nuclear missiles around on the ground, as press reports have suggested is being contemplated, must contend with the problem of close tracking by espionage techniques and the problem of large-scale saturation attacks by the Soviet Union, blanketing large areas of Europe with the relatively low blast pressure that would be enough to destroy soft missiles. Submarine-based missile systems will not suffer from many of these defects, but other problems will remain, for example the problem of controlling them. Nor are these forces likely to be as cheap as advocates of independent forces often suggest if they are to have much of a second-strike capability. The British have been learning in their blue streak ballistic missile program how expensive it is to develop the technology of ballistic missiles. If they carry the blue streak through to completion, and this is by no means certain, they will have an extraordinarily vulnerable weapon able to do some damage if Britain strikes first, but not if it is hit first. Bombs are relatively cheap, delivery systems much less so, and reliable second-strike capabilities quite costly. The effect on nonnuclear capabilities of having expensive nuclear weapon programs seems predictable if one judges by the behavior of the United States and the United Kingdom. They will almost certainly be reduced.

In the contest of nerves that would take place in a nuclear crisis, the small country would be at a serious disadvantage. Are we or the other allies of the small nuclearly equipped nation as likely to support it in a crisis, a crisis that threatens to explode into nuclear war? We can only speculate here, but the trend toward independent nuclear capabilities could threaten the cohesion of the alliance. If it promised greater security than alternative policies this trend would not be serious, for the alliance exists primarily for the protection of its member nations. That this is the case is far from clear.

There are even more serious objections to our helping other nations to an independent capability. It has been our policy to discourage the spread of nuclear weapons throughout the world, a policy we have fol-

lowed with little deviation in the postwar period. This policy is based on the belief that the long-term security of the United States and the world in general would be prejudiced by the wider diffusion of bombs. There is widespread concern over the consequences of nuclear weapons getting into more and more hands and especially into the control of less responsible powers than those now possessing them. There seems to be no natural stopping place in distributing bombs. We find it difficult to say that certain countries whom we trust shall have bombs and others shall not, and the addition of each new nuclear nation increases the incentive for others to undertake a development program. Thus one of the motives within France for acquiring a bomb of its own was the desire to emulate Britain. And there is little reason, judging from history, to expect that these weapons will never be used if they are widely distributed. With increased diffusion of weapons there will be an increased problem of nuclear accidents. Leaving aside the possibility of "catalytic war," there is a real possibility that the United States may be threatened with damaging nuclear attack by nations that today do not possess bombs at all, and we might actually be hit as the result of an accident or an irrational attack.

Here is one possible area of mutual interest between the Russians and ourselves. Neither of us is likely to be anxious to see bombs in the hands of too many people. For instance, the Russians may not be altogether pleased at the prospect of China armed with nuclear weapons. And we should expect with the rapid development of ballistic missile technology that China may be able to attack the United States not long after it possesses nuclear weapons. Would our response be to turn over bombs to the Chinese Nationalists and the South Koreans?

It would be difficult at best to halt the growth in the nuclear club. It may be impossible, but we might be able to slow it, and it would seem that before moving much further in the direction of diffusing nuclear weapons we should give more weight to the consequences of this policy and to the possibility of arriving at some kind of mutually beneficial explicit international agreement or tacit agreement by the United States and the Soviet Union to slow the diffusion.

Several routes toward giving our allies a greater measure of control over bombs are possible apart from the creation of independent national forces. There is the type of arrangement between the United States and the United Kingdom with the Thor intermediate range ballistic missile, one in which each country has a veto on the use of bombs and missiles we provide. The bombs remain in our legal custody until released by the President. This arrangement has some advantages. The bombs remain subject to our veto on their use while our ally has the power of vetoing our use of them through his control of the delivery system. In a crisis we could quickly turn the bombs over to our ally if it seemed that this would strengthen his resistance to threats. Even without our doing so, the legal niceties of the arrangement might not impress the Russians if they contemplated a nonnuclear attack only on the ally. They might think our ally would, in desperation, use the jointly controlled weapons. But most of the difficulties noted above remain: vulnerability, cost, the powerful tendency to spend less on nonnuclear forces.

Establishing a Western European nuclear force might seem preferable to having a collection of small national nuclear forces. A much more impressive strategic deterrence force could be created out of a total Western European defense budget of about \$14 billion a year as compared with the individual national forces that could be supported out of the component parts of that budget. But would a Western European force really be unified in any meaningful sense? The question of control is essential. Would every nation have a veto? If so, then the result could be a good deal worse than the present arrangement in which the United States has a considerable autonomy on questions of control. Finally, the fundamental links among the European members of NATO would not seem to be so much stronger than those that bind the United States to NATO. Surely it is more sensible to work toward an arrangement whereby these links are strengthened. For the United States this means, in particular, continuing its commitment to help defend Europe by contributing to a defense at several levels from the nonnuclear to the threat of all-out war. This does not mean that there are no circumstances in which it would be sensible for us to help establish independent nuclear forces. If NATO fails to provide adequate limited war forces and if the U.S. general war threat is sufficiently weakened, we may find ourselves forced to adopt this policy. But surely we should work hard on the alternatives before taking so momentous a step as to help spread nuclear weapons around the globe. In a crisis we may be forced to help set up some independent forces and it is sensible for us to plan for this contingency; but let us move cautiously, if any further at all, in this direction.

The use of nonnuclear forces

Why is so much made of the distinction between nuclear and non-nuclear war? Why make this distinction so sharp and not, say, the difference between less than and more than 100-kiloton bombs? Simply because the nuclear versus nonnuclear distinction can be made relatively easily. The yield of a nuclear weapon is difficult to estimate even with precision instruments, and would be extraordinarily difficult in the confusion of a war. To be sure, the distinction between ordinary high explosive and nuclear weapons, which now is unmistakable, may be reduced over time as nuclear weapons are further developed on the low side of the yield spectrum. Nonetheless, for the present—and for some time to come—this distinction seems to be the best one available to act as a barrier to the spiraling of a war into the all-out region. It is worth preserving. In addition, there is the force of tradition. We believe a rather large nonnuclear war can be fought without exploding into an all-out one because we have fought one in Korea—to be sure, under different circumstances from those of the 1960's. We are not so confident about even a small (hopefully) carefully controlled nuclear one.

Is it really true that the West cannot hope to defend itself by nonnuclear means? Consider the situation in Europe. If one compares the population and economic resources of the NATO countries with those of the Soviet Union and its European satellites, it is clear that the

West is far from inferior. It has a larger population and total economic output, more steel, petroleum, and a better technological base.⁵⁵ Moreover, the military net worth of the satellites to the Soviet Union may be negative. The problem of the nonnuclear defense of Europe is not one of feasibility—it is a question of cost. Nor does Soviet ground strength in being appear so formidable, even before the recently announced reductions, that the cost to NATO would be very high. If there is a Soviet preponderance with respect to conventional weapons in Europe, and it is by no means clear how great this preponderance in terms of military effectiveness is, it is because the NATO powers have chosen to make it so. They have done this in the belief, encouraged by the United States, that the NATO forces could count on the United States deterring the Russians with our strategic nuclear force along with our tactical nuclear weapons, and that nonnuclear defense was not really important. But the danger of Communist aggression below the threshold at which we would risk even a small nuclear war is serious. Russian pressure on Berlin is a case in point. Khrushchev seems to understand all too well that the dependence of NATO on nuclear conflict leaves him quite a bit of room for maneuver, possibly room enough to move us out of Berlin, with all that that implies for the cohesion of the Western alliance—especially if we were to withdraw gracefully in the mistaken belief that we had no acceptable alternative. The other danger is that the level of violence may not stay below the threshold—that a small war could grow to become a big one. One way to avoid this is to have strong enough nonnuclear forces to discourage such conflicts from occurring.

What then would be a sensible goal for nonnuclear NATO forces in Europe? It would seem to be no less than the ability to defeat the Soviet Union allowing for NATO's mobilization potential—or at least hold it to a stalemate.⁵⁶ Nothing short of this goal promises to give NATO the freedom of maneuver it needs so badly. It is worth recalling that it was not very long ago (1952) that the NATO goal in Western Europe came to 96 divisions in place and quickly mobilizable. It was the promise of the more efficient nuclear weapons that led to the abandonment of that goal and the substitution of the present goal of 30 divisions in place and an actual attainment of 20. The 96 division goal is clearly feasibly economically for the prosperous NATO powers. Even higher ones are feasible. Whether or not they are feasible politically is another matter. As long as leaders of governments in the West continue to think of nuclear weapons as favoring us, or as presenting threats to the Russians so great that war cannot occur, little increase in effort will be forthcoming. However, the high 1952 goals may be unnecessary. If the recently announced reduction in Soviet military manpower from 3,600,000 men to 2,400,000 men is actually carried out, the nonnuclear defense of Western Europe will undoubtedly benefit—unless this stimulates a cut in Western nonnuclear forces that leaves Western Europe no better off against this type of attack than it is today. Raising our goals might cause the

⁵⁵ The Communist bloc, excluding China, has about 58 million fit males of military age; NATO has 85 million. By 1965 the comparison will be 59 million to 95 million. For a discussion of the relative strength of NATO in conventional war potential see pt. II of this paper and "United States Foreign Policy in Western Europe," a study prepared for the Senate Committee on Foreign Relations by the Foreign Policy Research Institute of the University of Pennsylvania, October 15, 1959.

⁵⁶ For another statement on this objective for NATO see Hoag, *op. cit.*

Soviet Union to reverse itself on the announced Army cutback. The essential point is that there is no necessity for Western Europe to be vulnerable to nonnuclear aggression whatever the level of forces maintained by the Soviet Union.

In addition, recent technological developments in the field of non-nuclear warfare, while speculative, may be significant in improving the relative strength of the defense in nonnuclear warfare.⁵⁷ For example, a modern air defense system can probably exact an attrition rate on bombing aircraft too great to permit much nonnuclear bombing. While World War II bomber attrition rates in Europe were about 2 percent for each aircraft sortie, very much higher rates should be expected in future combat. A 10- to 20-percent attrition rate to bombers per sortie, a rate that a modern air defense system might achieve, while not enough to stop a nuclear attack, would quickly exhaust the offense in a nonnuclear war. Advances in antitank warfare may have comparable results on the efficacy of the tank. In short, nonnuclear battlefields may become very much more stabilized than in World War II; the analogy with World War I suggests itself. Here is a field for the superior technological base of NATO to show itself—in a broad program of research on nonnuclear weapons.

In Asia, the situation of the peripheral countries differs widely. Where our naval and airpower can be used efficiently, for example, in the defense of the Pacific islands and on the Korean peninsula, we may be able to use this technical-military advantage to good effect. Elsewhere, in the countries to the south of China and the Soviet Union, the relative strength of the Communist is very great and would be most difficult to counter at the nonnuclear level. The lines of supply from the United States are long, internal communications are poor and there is a shortage of bases for our use. If we are to help stop large-scale aggression here, nuclear weapons may be essential. But the earlier objections remain. Would nuclear weapons be effective in stopping aggression? How much damage would be done locally? Would the country attacked prefer not to be defended in this way? Even in this least favorable region, it is clear that the case for building up the nonnuclear defense of the threatened countries, as well as increasing our own mobile forces for deployment to threatened areas, is strong.

E. THE ARMS RACE AND ITS CONTROL⁵⁸

No informed person can view the long-run prospect for world peace with any equanimity. There are compelling reasons for being concerned about this prospect now, over the next decade, and into the indefinite future. In the minds of many people the fear of war and its consequences is associated with a particular concept, the arms race. A common view of this race sees the participants seeking to gain a military advantage over their adversaries, piling up more and more weapons essentially without limit, developing yet more powerful bombs, allocating a large and possibly growing share of their resources to weapons until eventually the spiraling race explodes into a great

⁵⁷ Wohlstetter, *op. cit.*

⁵⁸ I am indebted to Lewis Bohn for several ideas in this section. See also T. C. Schelling, "Surprise Attack and Disarmament," *op. cit.*

war. And in such a war all the weapons would be employed, it is argued; for if they exist, they will be used.

There are several distinct aspects of the race according to this view: The advance of military technology, the procurement and stockpiling of weapons, the effort to preserve a retaliatory capability, the effort to gain or preserve a first-strike advantage, the defense budget race, the publicity contest (e.g., the space race), and others. It is important to distinguish among these, for some actually help us attain our objectives. Of those that are harmful, some we can hope to affect through unilateral U.S. actions, some through international agreement, while others will prove difficult to influence at all.

Perhaps most obvious is the technological race. Within a few years the most advanced strategic weapons have progressed from the piston-engined B-29 bomber of World War II to ballistic missiles able to travel 5,000 miles in 30 minutes or less. Soon we will have such marvels as missiles launched from under the ocean and from aircraft in the air. Beyond that, what? Very probably some real surprises. This is perhaps the most difficult aspect of the arms race to influence. Advances in science will find military applications, and this is undoubtedly the most serious long-run aspect of the arms race. Progress along certain lines can be slowed, for example through a stopping of nuclear tests, but it cannot be halted. Meanwhile, new scientific developments are probably laying the groundwork for the next great advance in armaments.

Then there is the race in procuring bombs and weapons systems—more bombs of increasingly advanced design and more advanced means of delivery in the hands of the established nuclear powers and more countries joining the nuclear club. Here, as with the other aspects of military programs, it is necessary to look quite closely at why these systems are procured, for if we do not understand in detail the motives for having them, we stand little chance of being able to control them. One motive is to try to assure the preservation of the power to retaliate after a nuclear attack. This suggests that not all aspects of the race are harmful. The development and procurement of better protected retaliatory systems help stability; they reduce the danger of both deliberate and inadvertent war. And the new non-nuclear weapons mentioned may also help stabilize nonnuclear war.

The race is also one to improve relative military positions in order to have a better chance of winning. This is the traditional outlook on warfare, and it remains dominant for many of our military objectives, at least in a local sense for limited war, and it is not irrelevant for general war. Extended deterrence depends largely on our having some measure of military supremacy, and the military outcome is relevant even for the easier objective of deterring a deliberate attack on the United States. It is this aspect of the race that the minimum-deterrence theorists consider to be "infinite" in the ballistic missile era. That is, if both sides try to buy forces that promise military victory with limited civil damage to themselves, the race has no natural stopping place. But why should the advent of ballistic missiles make the military contest more "unlimited" than it has been before? Presumably each side has been trying all along to improve its relative position. And, as is evident, the Soviet Union has had some notable success. There is perhaps less reason to expect this race to be unlim-

ited than the contest between limited war forces, a type of armament that some advocates of minimum deterrence want to see increased. First, because there are the threshold values for civil damage, e.g., the "disaster" level discussed. Second, because there are courses of action open to the opponents to help assure retaliation.

The notion that the arms race will inevitably lead to, or has already led to, a limitless race, a crushing burden of arms, is not warranted—at least in the West. It can be applied with more justice to the Communist powers that have combined high defense spending with a high rate of investment, supported by a smaller economic base. But, in both the United States and the Soviet Union, the burden of arms seems to have been shrinking, not growing. There has been remarkable stability in U.S. defense expenditures for almost 10 years now, and this is also true of the published defense expenditures of the Soviet Union. Meanwhile total output in both countries has grown substantially—especially that of the Soviet Union. Somehow a balance is struck between defense and nondefense spending, and neither our opposition to communism, nor the Communist drive to expand (or fear of capitalist encirclement) has so far led either side to allocate resources to arms up to the limit where only a bare level of subsistence is left. This is not to say that the growth of the Soviet and Chinese economies, if combined with aggressive designs on the free world, cannot lead to a very high level of armaments imposing a heavy economic burden in the 1960's. And we should be prepared in any case for a continuation of Communist advances in military technology. These advances helped to keep our defense budget high in the 1950's and may drive it still higher in the 1960's—especially if some revolutionary technological advances are achieved by the Communists.

A widespread view is that the Russians can easily expand their military capabilities without constraint and that there is no reason why they should not soon have thousands of high-performance intercontinental missiles, advanced aircraft, many missile submarines, powerful ground forces, and a big civil defense program. (This belief is held by many technicians and is diametrically opposed to the one often held by policymakers and planners that Russian abilities are quite limited, fixed, and can be precisely estimated well into the future by our intelligence agencies.) It is true that, given time, they can have these weapons. But they are not free. The Soviet economy operates much closer to capacity than our own does, and the regime has committed itself to an extensive program for increasing consumption, a program that would not be given up lightly. Nor does it seem likely that the Russians would want to cut back on the capital investment to which they have always given such high priority. The Soviet Union, like the United States, has a defense budget problem too. The existence of these constraints is important for us to recognize. First, because we want to adopt military postures which are costly for the Soviet Union to counter. We must anticipate Soviet responses to our actions in the form of reallocations of their defense budget; and the adoption of countermeasures that seek out weaknesses in our posture. For example, measures which raise the barriers to our retaliation—bigger and more accurate missiles to destroy our blast shelters, antisubmarine forces to counter our submarine missiles, active defenses to stop our missiles and bombers from penetrating. We want to leave the Russians unable to completely offset our actions by the adoption

of such measures up to the limit of their willingness to allocate resources to defense.⁵⁹ We must, of course, take account of the possibility that the Soviet defense budget will be increased in spite of the sacrifices entailed.

Are we stressing too much the notion of a "race" with the Soviet Union? We have our own set of values and our own culture, it is argued, we attach a higher value to present than to future consumption than does Russian and Chinese society. (There remains the problem of the attractiveness of a system which promises rapid economic development to underdeveloped countries.) If to this attitude one adds the belief that the arms race is an avoidable phenomenon, and that war, or at least nuclear war, is no longer an admissible instrument of national policy, then it would appear that a good case could be made for dispelling concern over Russian and Chinese economic growth and, in fact, to regard this economic progress as a boon holding forth promise of a lessening in world tensions.

This is a hopeful view of the consequences of Communist growth. It receives support from recent tendencies in Russian society which has advanced significantly from the dark age of Stalin. It might be tragic if the West, by its defense policies, were to stimulate the Soviet Union to greater measures of repression, and to substantially greater defense spending than it otherwise might undertake.

There are, however, as suggested earlier, good reasons for believing that the actions we most urgently need would not have this effect. For example, measures which would limit damage to the United States in a general war would still leave us badly enough off; strengthening the nonnuclear defenses of NATO would hardly appear as a threat calling for drastic and expensive counteraction on the part of the Soviet Union. The view, that communism may be losing some of its revolutionary drive, which surely must be held very tentatively at this time, combined with the more ominous aspects of the arms race, especially the longer term ones, suggests that one of the most important areas of concern for the United States and for the world is disarmament.

These more ominous aspects of the arms race would seem to be the stability of the deterrent balance, the diffusion of nuclear weapons throughout the world, and the long-run consequences of advancing military technology. Here are some real challenges for disarmament.

International disarmament discussions have usually had a curiously ritualistic character. Representatives of states, under internal and external pressures to do something about the arms race, meet periodically to discuss sweeping multistage plans for the parallel reduction of forces, specified weapons, and manpower to successively lower

⁵⁹ Oskar Morgenstern suggests that our protective measures create their own counters. "The following fundamental principle ought to be self-evident: *The harder the bases, the heavier will be the attack.*" From "The Question of National Defense," Random House, 1959, p. 47. This seems to assume that the enemy is without constraints, that it costs him nothing to procure more and larger missiles to offset our defenses. This argument is modified somewhat later, p. 50, where he asserts that "*Hardening imposes a greater burden on a country than the burden the opponent has to assume in order to raise his striking power with which to offset the effects of hardening.*" This modified view is somewhat more to the point but still defective. The cost of hardening missiles adds less than 10 percent to the cost of buying the entire missile system, including bases, ground equipment, and training of personnel, plus the cost of operating them over a period of 5 years. The cost to the enemy of larger or additional missiles able to destroy a single sheltered missile by a direct attack on it would come to very much more, probably at least 20 times as much and possibly 200 times the extra cost of our hardening.

Morgenstern, in this connection, also expresses concern over a side effect of blast shelter, the fallout damage to people in the region where the missiles are based if the enemy does respond by increasing the scale of his attack. It is sensible for us to locate our sheltered missile sites in areas of low population density and this in fact is being done.

levels, with the final level usually being the elimination of the forces in question.⁶⁰ Meanwhile, national defense programs have gone along relatively undisturbed. Often, neither the military nor the political significance of the proposals is apparent. What would really be the effect—to take an example—of an agreement to reduce the Armed Forces of the United States, the Soviet Union, and China to 1½ million men each, and those of Britain and France to 650,000, on such urgent issues as the likelihood of all-out war, or its consequences if it comes; or on our ability to protect Western Europe or non-Communist Asia?⁶¹ It might help us on all of these things—or it might not, and one suspects that nobody really knows. This type of proposal, to the extent it has been thought of in military terms, seemed to be based on the belief that a symmetric lowering of the quantities of arms reduces either the likelihood of war or its violence. In any case, it promises to reduce the resources poured into armaments. Neither analysis nor history lends much support to the belief that reducing armaments lowers the likelihood of war. On the contrary, the low level of arms during the 1920's, only to a limited extent the result of international agreement or control, probably made it substantially easier for the dictatorships to acquire rapidly a strong military position in the 1930's. The relatively high level of armaments before World War I unfortunately refutes the opposite hypothesis that a relatively high level of armaments might prevent war.

Perhaps the prevailing view among students of war and armaments is that weapons are a symptom of basic political and ideological differences among nations and that it is difficult or impossible to control them by agreement without a resolution of the underlying differences, or the acceptance of the status quo. The corollary of this view is that if the differences are resolved, a reduction in arms will follow unilaterally. If this were the case, there would seem to be little scope for international agreement on disarmament.

The nature of war has changed, however. The mutuality of interest among the nuclear powers on some issues should now be quite strong. This suggests another attitude toward disarmament negotiations, and a more hopeful one: concentration more on specific issues. The first postwar disarmament proposal, the Baruch plan in 1946, is an example. The United States offered to turn over "all phases of the development and use of atomic energy" to an International Atomic Development Authority. And the latest proposed agreement to suspend nuclear tests with appropriate inspection arrangements is another.

This mutuality of interest exists because, to put it in the language of game theory, war is not a constant-sum game. What one side loses is not necessarily a gain for the other side. Both can lose. Mutual interest would seem to exist on such risks as accidental or inadvertent war, perhaps on the avoidance of any kind of general nuclear war, obliterating nuclear attacks that would far exceed political objectives, the diffusion of nuclear bombs around the world, and possibly further advances in bomb technology. These areas of likely mutual interest suggest an approach to disarmament that has

⁶⁰ See "Disarmament, an Outline of the Negotiations," by Anthony Nutting, Royal Institute of International Affairs, 1959.

⁶¹ This was the Western proposal of Mar. 29, 1955.

received growing attention in the past few years. It not only concentrates on specific issues but also emphasizes less the elimination of arms than their control; arms control rather than disarmament.⁶² This was the objective of the President's open skies plan in 1955, a plan intended to provide warning of a gathering attack.⁶³ The most systematic attempt so far to apply the principle of arms control was in the surprise attack conference in 1958. This conference, at least as envisaged by the West, was aimed at the problem of trying to stabilize the strategic balance, to find agreed measures which would reduce the likelihood of either a deliberate or an inadvertent nuclear war. The object of measures of this type would be to preserve the retaliatory power of both sides by limiting first-strike potentials. The measures that are of interest for this purpose are only incidentally traditional sorts of "disarmament" measures. A useful agreement might involve no reduction in force levels. Agreement might be sought on measures for inspecting the state of force preparations (open skies), or for last-minute warning of an attack. Beyond this, limitations, with inspection, might be sought on the deployment of certain types of weapons (disengagement); or on their testing (nuclear test suspension), to mention only a few of the possibilities.

The task of stabilizing deterrence by agreement raises many problems, some of which deserve brief enumeration: (1) It requires some care to make certain that a given measure will hurt and not help a possible first strike. For example, the net effect of having inspectors at military bases is not necessarily stabilizing. Although they could help to give warning of a first strike by reporting on the precise location and status of forces they might also help make a first strike more successful. (2) Many measures that might reduce the danger of war by miscalculation could increase the danger of deliberate war (and vice versa). This could be the case, for example, with an agreement not to keep aircraft on patrol carrying bombs. If both sides were to keep their aircraft on the ground, there would be less of a chance that either would nervously trigger a war by mistake. But this increases the vulnerability of both sides to a deliberate attack.⁶⁴ The problem of reducing the likelihood of inadvertent war calls for a different emphasis in the design of the control system from that called for in the design of a system to discourage deliberate attack. Here the object would be not so much to limit or warn of a deliberate attack as to provide reassurance that an attack was not underway. It will take carefully designed agreements to reduce the probability of both kinds of war, although there is a good chance that this can be done. (3) There is the risk of deliberate evasion and what to do about evasion if it is detected. The history of arms limitation agreements suggests that democracies are prone to wishfully overlook evidence of present violations. (4) There is the important difficulty alluded to above—adapting the agreement to changing technology.

⁶² T. C. Schelling, *op. cit.*

⁶³ The open skies proposal illustrates a general problem with disarmament agreements—the effect of rapidly changing technology. The proposed scheme would have detected a ground assault in the process of mobilization and deployment and would have had other useful roles in an agreement. But as a proposal to help on the surprise attack problem it was seriously deficient, for at the time the proposal was made, the surprise-attack threat had evolved in a way that made timely detection of a nuclear attack by aerial photography quite unlikely. See Wohlstetter, *op. cit.*

⁶⁴ Very probably not an attack by aircraft for, if on the ground, they could be kept under observation. A greater threat would come from other weapons either not part of the agreement or difficult to control effectively.

(5) Then, there is the problem of allies and neutrals—an especially intractable one. Which countries are to be included and which excluded from agreement? Which ones are to be counted as part of the “East” and which as part of the “West” (e.g., eastern “neutrals,” western “neutrals” and neutral neutrals)? What effect would agreement have on the defense of these countries, either directly or indirectly, from the weakening of our extended deterrence implied by an agreement making general war less of a threat? (6) What would happen to an agreement on general war forces if a limited war were to break out? (7) An attempt to reach agreement must face the formidable problem of the Soviet intransigence, including the desire to preserve secrecy, in part because Soviet leaders recognize secrecy as a military asset.

This list of problems may suggest that arms control is hopeless. However, they are mentioned, not because they are insoluble, but because they exist, they are complex, and they require careful investigation. After all, the problem of agreement on arms is at least as complex as the defense problem because it includes the latter as a component. The principal reason why designing useful measures to help stabilize the military balance may not be hopeless is, paradoxically, because we would not depend entirely on them. *Measures to stabilize deterrence are not intended as a replacement for national defenses.* We hope to be able to deter war unilaterally; agreements increase the range of options available. They make it possible to do a better job or to do it more efficiently. And we must assess the military effectiveness of agreements by comparing them with the alternative unilateral measures that would accomplish the same task. This means that agreements of limited scope might be quite useful.

Another area of possible agreement, much discussed in recent times, is agreement on forces stationed along the line of contact between East and West. Here the major difficulty, one hard to overcome, is the asymmetry in geography. The Soviet Union and China have the considerable advantage of proximity to the peripheral areas we are anxious to defend. Any agreement that reduces or removes U.S. power from the scene is likely to remove it to a position a long way back. And as long as the Soviet Union insists on restrictions which would apply to only a part or none of its territory, but to all or even very much of the territory of the Western Allies, agreements of this kind will be hard to conclude.

What does this leave? Quite a few things. One area of possible mutual interest is the looming problem of the diffusion of nuclear weapons. Another is the class of measures that Schelling has stressed, those that might be devised in “normal” times but only applied in a crisis at a time when urgent concern over general war might have broken down the normal barriers to agreement. Still another kind of agreement, and an important one, should be recognized because it is now in effect. This is the tacit agreement that regulates the behavior of the armed forces of East and West and indirectly helps to keep defense budgets no higher than they are. Both sides observe rules of behavior in the operation of their military forces and toward their neighbors which, without being formal, are nonetheless real. Such tacit agreements are not enforceable except through the ability to respond unilaterally. But this is a powerful incentive. It may be that the most hopeful prospect for meaningful agreement will be of

this tacit variety, as both sides, through the careful choice of unilateral postures, succeed in working toward a more stable balance of power.

The possibility that formal arms-control agreement will permit any substantial reduction in defense budgets seems fairly remote. If Communist expansionist behavior continues, agreements that would help stabilize the general-war balance would increase the need for limited war forces; agreements that would disengage limited war forces along the periphery would increase the need for central reserves and for added transport. To repeat, this does not mean that agreement on such matters is necessarily undesirable; it does mean that savings resulting from agreement may prove ephemeral. Unless, of course, East and West arrive at some kind of political settlement. After all, it is the expansionist tendencies of the Soviet Union and China that have forced the West to build up their arms, and without the abandonment of these pressures there can be no great prospect for extensive arms reduction. The Soviet Union may regard its prospects in the arena of competitive coexistence so highly that it might be willing to settle for a stabilization of some aspects of the arms race. It might even adopt the policy of minimum deterrence of general war and reduced ground forces. Both possibilities are suggested by Khrushchev's announcement on the ending of bomber production and a reduction in armaments. Whether or not these developments will actually occur is uncertain and we would do well not to take them for granted.

F. OUTLINE FOR A DEFENSE POLICY

The military problems we face are not problems in the use of force alone. They are also problems in deterrence. This aspect of military planning, always present, has become of central importance with the growth of weapons whose use threatens great destruction. We have been thrust into the situation where threats, counterthreats, and coercion assume a crucial importance. Even if we do not engage in brinkmanship, we are constantly engaged in considering the brink—because it is there. We can move toward or away from the brink, but short of the effective abolition of nuclear weapons, a fairly remote possibility, we cannot eliminate it. If we foreclose alternative defense possibilities and press resolutely toward the brink, our threat becomes more convincing. We may make great gains—and possibly be destroyed. If we move away from the brink, we invite our opponents to move against us.

We have to make three broad policy choices: First, on the defense objectives we will support; second, on our willingness to risk all-out war; and third, on our willingness to make economic sacrifices. If our defense objective includes the containment of communism within its present boundaries, and if the Communists press against them, then we must counter this with some combination of direct defense abroad and extended deterrence. The kind of extended deterrence we have practiced during most of the 1950's seemed to be a cheaper alternative. It is no longer clear that this is so. Quite apart from the cost of the alternative policies open to us, there is the question of relative risks. The essential choice for the attainment of many of our defense objectives is between the level of our defense budget on the one hand and the risk of all-out war on the other. In the end, this

means choosing between the foregoing of some leisure and private consumption versus the all-out war risk.

How are we to choose among the policies and postures discussed here? We cannot do everything, it is rightly argued. We must choose. But while we cannot do everything, we can do a good deal more than is often believed. We cannot achieve our objectives simply by concentrating on building up our strategic force or civil defense, or limited nuclear forces, or nonnuclear forces. The following principle has much to recommend it in the design of our military posture: That we be able to meet aggression over a wide spectrum without being forced to increase the level of violence, but that we have the capability to do so. If the enemy refrains from the use of nuclear weapons, we should be able to also. If he elects to use nuclear weapons in limited war, we should be prepared to do so. And if general war comes, we should be prepared to fight it through in a controlled fashion to the end. This is not to argue that we would be bound not to step up the level of violence, for there may be circumstances in which we would not only want to threaten this but also to do it. In some areas, especially in Asia, our choice might turn out to be loss of the conflict versus the use of nuclear weapons.

The principal objection to this policy, apart from its budget implications, is that this weakens the credibility of our deterrent and encourages our opponent to attack at points of weakness in our position:

A potential aggressor must know that he cannot always prescribe battle conditions that suit him. * * * He might be tempted to attack in places where his superiority was decisive.⁶⁵

He might think our will to resist would be weakened—but our power would be strengthened. It could include a strengthened strategic airpower and air defense, the initiation of a modest civil defense program, an increased commitment to NATO defense along with some Western European force expansion, the strengthening of our forces in the Pacific and Far East, and more research and development on a wide variety of weapons. It seems that a demonstration of our commitment to oversea defense along with a strengthened general war position could have the opposite effect.

What combination of general and limited war policies might make sense? We must remember something that Americans so often have failed to understand about warfare, that it should serve political ends. General thermonuclear war is not necessarily Armageddon, and our policies should aim both at preventing general war and mitigating its most catastrophic consequences. Revenge in itself is of no interest to us, nor are we especially anxious to commit national suicide. There are measures that make it possible to limit a general war, just as there are measures that make it possible to have "limited" wars. To be sure, it takes two sides to do this, and we cannot be sure that our enemies will cooperate. But it is surely wrong for us to assume that they would inevitably behave in a way to bring about the destruction of both sides.

Neither the mutual-suicide, still less, the world-annihilation positions at one end of the spectrum of opinion, nor the massive-retaliation position at the other end withstand careful examination. This is not

⁶⁵ Dulles, *op. cit.*

to say that they are without any basis at all. The worldwide effects of a large thermonuclear war must be taken into account in planning by governments; and the mutual-suicide position recognizes a luminously important fact—that the Soviet Union has bombs and the means of delivering them and that this upsets the basis of much of our military planning of the past 15 years. And it recognizes that the threat of damage well below the level of total annihilation serves the purposes of deterrence. But this does not mean that all-out war has been ruled out or that a policy of depreciating the need for preparations for it is the best way to keep it from happening and for us to survive. The mutual-suicide view of war assumes a kind of irrationality in the behavior of governments that should be one of the objects of our policies to avoid. The massive-retaliation doctrine recognizes a different fact, that the West is weak around much of the periphery of the Communist bloc in the face of a major attack. It fails to see the truth the mutual-suicide theorists do—that nuclear weapons are no longer on our side, and it underestimates the power of the West to provide powerful limited war forces around much of this periphery.

Our preferred general war choices lie in the deterrence-plus-insurance and extended-deterrence region. We need to strengthen our second-strike ability, our ability to withstand a well-designed attack and penetrate the many barriers to retaliation, and this task promises to require more and not less effort at least in the immediate future. Deterrence may fail, and carefully designed countermilitary capabilities and active and passive defenses are a vital complement to a retaliatory capability. They work for the deterrent by promising the enemy the destruction of something he values, his military power, and they give us the freedom to attack civil targets in a controlled fashion without abandoning our own cities to unlimited destruction. This damage-limiting capability is compatible with the ability to deter a deliberate attack. This is true partly because we can dampen any increased enemy incentive to strike first by strengthening our own retaliatory power and partly because the insurance such measures provide is limited.

How important is extended deterrence for the defense of allies in the 1960's? It is a major element in our defense of Europe today and promises to remain so for some time to come, although of diminishing importance. The resolve made evident by a thoroughgoing strengthening of our general war capabilities could only slow the rate at which our general war threat helps to protect the free world. It can hardly stop or reverse it. The main task of defending third areas must increasingly be shifted toward a more direct defense. It is the insurance aspect of a program of fallout shelters, improved active defenses, and countermilitary capabilities that seems most important. The cost would not have to be large to be useful. A massive program is a much more dubious matter. Increasingly our plans for the defense of oversea areas should emphasize direct defense abroad.⁶⁶

The case for increasing the relative strength of the nonnuclear capabilities of NATO and possibly of our Asian allies seems clear.

⁶⁶ This does not mean that our remaining strategic forces should be withdrawn from overseas bases—especially European bases. These forces have three important functions: They make more evident our commitment to overseas defense, their advanced location may enable them to carry out counterforce attacks in some possible war-outbreak situations, and they face the Russians with the alternative of hitting a part of our strategic force if they are to launch a strategic attack at all.

Here one of our most important current weaknesses matches our greatest underlying strength. We can go a long way to fill the gap below the nuclear war threshold. Beyond that we need the means to fight a limited nuclear war, and many of our theater forces must be designed to have some kind of a dual capability. But the unresolved character of most of the problems having to do with this kind of war suggests that we should be diligent in preserving the nonnuclear capabilities of such dual forces. Finally, the alternative of setting up independent nuclear forces must face the serious objections mentioned, including the one that this policy might encourage a dangerous diffusion of bombs.

A military strengthening abroad should, as a minimum, be aimed at promoting the policy of containment. But this is a policy of no more than holding the line and it would continue to leave the Communist bloc in a position of choosing the time and the place for advances. The few attempts on the part of the U.S. Government to promote a less passive policy, identified by the terms "liberation" and "rollback" have not turned out well. We have been unwilling to make the increased effort and undergo the risks of such a policy. Yet if we remain only on the defensive we may suffer great, if gradual, losses in the long run. It seems that without going so far as to promise "liberation" we should recognize the importance of being able to apply pressure at some points against the Communist bloc as an offset to aggression in areas where our position is weak. Our strongest position around the entire periphery of the Communist bloc would seem to be in Europe. In terms of basic strengths in particular, our position then is impressive indeed. And for the task of applying pressure on the Communist bloc, it would seem that the emphasis should also principally be on expanded nonnuclear forces.

It may seem that this position is one of asking for more of everything. It does ask for more of several kinds of things, but not everything is of equal importance, and some moves might be positively harmful. Three of the broad alternatives we might adopt are dubious, two of which happen to be directions in which the United States is moving, while the third is not. First, for the reasons already mentioned, a policy of encouraging the creation of independent nuclear forces seems to be dominated by the collective-security alternatives discussed. Second, the policy of designing our theater forces primarily to fight limited nuclear wars may cost too much in terms of the nonnuclear capabilities foregone. Third, a really massive program of preparing for general war, including in particular a large civil defense program, probably is not the most efficient use of the many billions of dollars that would be called for. A more modest insurance program plus strengthened oversea defense is preferable.

II. DEFENSE AND THE ECONOMY

A. HOW MUCH DEFENSE SHOULD WE BUY?

Whether or not a war occurs and how we might fare will depend in good part on the size of our military budget and those of our allies in comparison to those of the Communist powers, and how efficiently both sides spend these budgets. The essential point that we must keep in mind is that we can buy more or less defense. If we want to

have insurance in case deterrence fails, or strengthen an ally unable to defend itself adequately, there is much that can be done to attain our objectives, but this will not come without cost.

Admitting this, how much should we spend on defense? Is \$40 billion about right, should it be double that, or half? How much more defense would we get for a doubled budget? How much less for half? With all of the public discussion of the defense budget, the effect of large changes in the defense budget is rarely raised. The defense budget has great stability in the absence of a crisis. It takes the outbreak of a war or its end for the issue of large changes to be prominent. This issue is, of course, one of the central and most difficult ones on defense. Another question related to the amount of defense we should buy is, how should we go about deciding on the size and allocation of the defense budget? Here, we can easily identify two opposed views, neither of which is correct.

Budget first versus strategy first

Most discussion of what to spend on defense is dominated by two approaches: One has been called the "requirements" or "strategy first" approach. The other has been labeled the "budget first" approach.⁶⁷

The requirements approach holds that there are certain absolute defense needs, stated in terms of military hardware and manpower. These needs must be met regardless of cost, even if it exhausts the budget, if the security of the United States is to be guaranteed. Those who take this approach are especially aware of our defense problems and that we have objectives deserving of great support. They often have a good understanding of important military tasks and the difficulties and obstacles in the way of attaining them. The natural result tends to be an unqualified assertion of what is needed to do the job. This approach has major shortcomings as a principle for the determination of the level and allocation of the defense budget. In its usual, absolute form it fails to recognize that both we and our opponents have a wide range both of objectives and of alternatives from which to choose to accomplish any objective, that some objectives of lower urgency deserve support, that there is great uncertainty, both strategic and technological, intrinsic to military planning. It assumes that military intelligence can make precise, valid estimates of the enemy "threat" various future dates. The possibility that the enemy may make a different choice—perhaps influenced by our own choices—is ignored. The estimates are handed to the military planners who calculate the forces "required" to overcome this fixed enemy, and the results become military requirements. The uncertainty in our estimates of enemy forces and tactics and the uncertainty in the performance cost and date of availability of our future weapon systems is often ignored. This approach finds its real utility as a technique in the bargaining process as a convenient way of presenting and defending requests for resources.

In bargaining for larger budgets, the services find themselves opposed by a group of people whose attention is riveted almost exclusively upon costs and the budget. This group holds that the marginal productivity of additional sums spent on defense is low, perhaps zero,

⁶⁷ For a discussion of approaches to defense planning see Alain Enthoven and Henry Rowen, "Defense Planning and Organization." To be published by the Universities-National Bureau of Economic Research, Princeton University Press.

that national security is also served by a healthy economy and that the health of the economy would be impaired by further increases in Government spending, that if the defense budget were increased substantially the inevitable consequence would be inflation. An extreme version of this approach is that we would go "bankrupt."

This budget-first group understands that costs are important, that we cannot allocate all of our resources to defense, and that military demands are intrinsically insatiable. Someone has to hold the line somewhere. They also recognize that there is inefficiency in our Defense Establishment. They consider perhaps the most effective way of increasing the efficiency of that vast organization is to squeeze hard on its budget.

They often fail, however, to understand the seriousness of our defense problems, and that a war is likely to be more wasteful than inefficiency in the Pentagon. And they often fail to recognize that while it is true that the marginal productivity of additional expenditure in some areas is low, in many it can be quite high. (They, of course, face the difficult problem of deciding which are the worthy activities and which are not—in an environment characterized by intensive bargaining and great technological and strategic uncertainty.) On the health of the economy, however, there is no question but that the extra inflationary pressures of increased defense spending could be offset by tax increases over a wide range. There may, for large and sustained tax increases, be some adverse effect on incentives. However, there is no basis in fact for the arguments that we cannot afford more defense spending. We can afford more. The real issue is one of balancing extra sacrifices against extra gains.

While these two approaches are wrong, in practice they may not be equally so. Uncertainty about the circumstances in which military force will be needed and about the performance of weapons systems is too easily overlooked by the budget-firsters. For example, our general war threat will probably deter an important class of aggressions; therefore, why spend money on other forces as insurance? The requirements approach leads to overinsurance. (Requirements are absolute, but they turn out, in fact, to keep ahead of the available budget.) But look at the difference in the penalties. If we are too weak we risk a war, possibly a war calling for a costly mobilization or even general thermonuclear war with its widespread devastation. The penalties for overinsurance are mostly some consumption and leisure forgone, but it is unlikely that this penalty will be as great as the cost of even a small shooting war. Another penalty might be an exacerbation of one of the less desirable aspects of the arms race. This penalty can be minimized if we choose our policies cautiously, with careful attention to the responses they evoke in our opponents.

A balanced view

Our defense objectives support higher goals of national policy. We wish to defend the United States and its allies from attack and to help protect the free world. These goals and others can be furthered, though not achieved absolutely, by our Defense Establishment. It pursues lower level objectives, such as defense of the United States against surprise attack. These lower level objectives cannot be achieved absolutely either. It is always a question of more or less. Our society has limited resources, it cannot do everything that is

desirable. A part of these resources, approximated by the defense budget, is turned over by Congress to our Defense Establishment for the purpose of achieving the various national defense objectives, and it should allocate these limited resources toward that combination of defense objectives which brings us closest to the goals of our national policy. (In a democracy, there is no way in principle to decide on an optimum combination of objectives toward which our Defense Establishment can work. This doesn't mean that it is impossible to arrive at rough agreement on goals, however.) In sum, we have to balance our preferences for consumption, leisure, more rapid economic growth, and avoiding inflation, against our preference for greater security for ourselves, our allies, and the free world. How much of our resources we have to allocate to given objectives depends on the efficiency with which we carry on our defense activities.

The concept of efficiency relates the achievement of our objectives, to cost, and to the budget. It is one standard by which we can evaluate how well the budget is used. However, the problems are too difficult for any approach to perfect efficiency, our objectives are not that clear, and the technology with which we work is changing too rapidly. But we can hope to avoid gross inefficiency by avoiding choices which are clearly inferior to other alternatives open to us. And we can hope to make improvements by reallocations within a given budget which leave us in a better military position. *Above all, we want to avoid the worst kind of inefficiency, the situation which leaves us with completely open gaps in our capabilities which are exploitable by an enemy.*

The defense system as it now exists contains biases which work against efficient allocation and which are not corrected by countervailing forces. As a result, the bargaining between the services and the Office of the Secretary of Defense, and between the Department of Defense, the Bureau of the Budget, and the Congress produces allocations which in many cases are quite inefficient. For example, the military services are concerned with the performance of our defense, that is, with effectiveness, and not with cost as such. For the services in the pursuit of greater defense effectiveness, improved efficiency and larger budgets often seem alternatives. Moreover, seeking a larger budget may be easier than improving efficiency. Improving efficiency requires hard choices and generates conflict within the organization, and the opposition to a higher budget is external; it is easier for the organization to unite against the outside world. In a sense higher budgets and increased efficiency are conflicting alternatives. With a given budget, effectiveness will be greater, the greater the efficiency. But in the long run, when budget levels are variable and subject to negotiation, it is not at all clear that if the services were to operate within their current budgets with maximum efficiency, that our overall defense would be satisfactory.

This does not mean that anyone is intentionally wasting money. The emphasis on getting more budget stems in large part from the fact that the budgetary process does not provide ex ante budget constraints, either for the services or for major combat commands, within which they are free to allocate. There are, of course, guidelines sent down through the Bureau of the Budget and the Office of the Secretary of Defense. But the guidelines appear to the services partly as moves in a bargaining process and not always as bind-

ing constraints. Furthermore, they are not generally presented in such a way that they appear as constraints within which the services will be free to buy alternative programs on an equal budget basis. Rather, they are "one-sided" constraints. The limitation side is emphasized. The promise that would be implicit in a genuine budget constraint—that the organization constrained can trade weapons on a dollar-for-dollar basis—is not given. If the services give up a project, they are not assured of getting the money for another project of higher value. As a result, every question of allocation is a potential battle between the services and the budgeteers over budget level.

Some improvements are needed in our methods for determining budget level as well as allocation, and with serious problems of information volume and flow in a large bureaucracy in a context of rapidly changing technology, the choice of budget level is bound to be a collective decision in which the agencies affected have some voice. However, it is all too easy for the participants in the budget struggle to lose perspective, to feel that they must resort to extreme bargaining acts, and to overvalue the effectiveness of the tactics. The overall allocation of our defense budget would be improved if both sides in the contest over budget level could separate questions of budget level from budget allocation, and redirect some of their energies from the struggle over budget level to the problem of improving allocation. (Not all of their energies however, for the level of the budget should not be taken for granted.)

Among the several changes in defense organization that might be helpful in this direction—there are no panaceas in view—is a change in the structure of the defense budget so as to identify outputs (e.g., objectives and weapons systems) independently of inputs (e.g., pay, fuel, maintenance). Military objectives of the kind illustrated above, and much more detailed ones as well, should be made explicit. To the extent that it is possible, relevant standards of performance which relate weapons to objectives should be developed. Then different weapon systems can be considered for the various missions. For example, discussions of the operation of our missile force or of plans to buy more missiles should be focused on precisely what job they are intended to accomplish: for example, deterrence of attack on the United States, limiting damage, or both. The justification for buying more of them should not be merely that it gives us more missiles, or that more are needed for the defense of the United States, but rather that this will contribute in a measurable way to the objectives for which we maintain strategic offensive forces, and that they will contribute more to our attainment of those objectives than, say, the extra bombers that could be bought and operated for a comparable amount of money, and that they will contribute more to our national objectives than any of a wide variety of nondefense expenditures.

In addition to making budget categories correspond more closely to our objectives, other possibilities include a greater decentralization of the entire defense establishment through the use of budgets and prices; greater centralization of policy decisions that should be made at the highest level that are often made now at low levels; changes in personnel policy, and changes in the grouping of responsibilities among the services.⁶⁸

⁶⁸ See Enthoven and Rowen, *op. cit.*

*How much defense can we stand?*⁶⁹

Much discussion of the defense budget assumes that the burden of defense is already heavy and that further defense increases would endanger the health of the economy. It is even suggested that we might, in some sense, go bankrupt. The Nation cannot go bankrupt from a high rate of defense spending. The main threat is one of mounting inflationary pressure, not of inability to manage interest obligations or to pay off debt as it matures. What people must fear, therefore, when they speak of "bankruptcy" of the Government, are sacrifices entailed by increasing the proportion of our national resources allocated by the Government. These sacrifices involve giving up goods in the private sector of the economy in order to devote more resources to defense, aggravating the risk of inflation if taxes cannot be, or are not, raised sufficiently, and impairing incentives to produce because taxes are increased and consumption is reduced.

The United States is enjoying the highest standard of living in history. It is absurd to say that we cannot at this point give up any nondefense goods. The defense budget is currently at about 9 percent of the gross national product. In 1944 defense outlays were over 40 percent of GNP, and as recently as 1953 they amounted to 14 percent—in years when private consumption was considerably smaller than it is now. To increase the defense budget by 50 percent would not cut back consumption or investment very sharply; it would leave more per capita for these purposes than was available as recently as 1955. The entire increase might come from a small reduction in leisure, through a reduction in unemployment, by increasing the length of the workweek slightly; and by drawing more people into the labor force.

This assumes an immediate increase in the defense budget. There are good reasons for contemplating some such increase. However, many of our problems are long-term ones. The United States will undoubtedly grow at a rate of at least 3 percent, close to \$15 billion, per year. We could, therefore, increase the defense budget by over \$10 billion annually without retreating from our present levels of consumption and leisure, while investing the additional amounts annually to sustain economic growth. The reduction in the private sector would actually be smaller than the amount of the budget increase because an increased defense budget would lead to a reduction of unemployment and a greater national product than would otherwise be forthcoming. An increase in the defense spending (like any other increase in aggregate spending) would pull some of these unemployed resources into productive jobs. This is not to say that an increase in defense outlays is the only way to reduce unemployment. Other measures could certainly do so. Nonetheless, a defense budget increase is not wholly a diversion of resources from nondefense goods.

The Korean war experience provides a good example. Before the outbreak of the Korean war, the proposed defense budget of 1951 was about \$14 billion, and there was a good deal of debate about whether or not it should be a billion or so dollars higher. One prominently advanced view was that the economy would be strained by the higher budgets proposed. As it turned out, defense spending about tripled

⁶⁹ This section is based in part on some unpublished work by Roland McKean. For an extended discussion of this topic see Hitch and McKean, *op. cit.*

between mid-1950 and mid-1952, while the rate of total Government spending doubled—from \$40 billion to \$80 billion a year. Consumer spending over that period increased from about \$190 billion to \$210 billion; investment in new plant and equipment, from about \$46 billion to \$49 billion; personal savings from about \$11 billion to \$14 billion. Correcting for the price inflation that took place, about 10 percent over the period, spending on these sectors remained about constant. By the end of the war in 1953, both national security and the private sector of the economy had received \$30 billion increments. The extra resources came from reduced unemployment, longer hours, and increased productivity of labor and capital; in short, we financed the Korean war by reducing unemployment and leisure. The economy had another price to pay, a sharp rise in prices, largely the result of heavy forward buying in late 1950 and early 1951.

The danger of inflationary pressure can be managed if the defense budget is increased gradually and if nondefense goods are consciously given up by means of a tax increase. Avoiding any inflationary pressure might require tax receipts somewhat in excess of expenditures, because even a larger balanced budget can generate some expansion of aggregate spending. (Avoiding any inflation during the Korean war would have meant higher taxes, lower gross output, and lower levels of consumption and private investment than were attained. Fewer resources would have been called into use.) Consider a \$10 billion increase in the defense budget. If the increase took place over several years, there would be scarcely any problem with inflation from the extra defense outlays. In 3 or 4 years, growth of the economy would bring in extra revenues amounting to \$10 billion annually. If the budget were increased abruptly, extra tax receipts would be necessary for 3 or 4 years in order to dampen inflationary pressures, especially from anticipatory buying.⁷⁰ But if the economy had little slack, some inflation would be hard to avoid. Sometimes, of course, there is slack in the economy and the pressure of increased defense spending on prices in a recession would be small.

In the long run, however, if the economy is maintained at that level of resource utilization where prices are constant or slowly rising, then extra resources for defense will have to be diverted entirely from our private product. The main point is that modest increases in defense budgets, if well managed, should not produce any inflation.

Larger budget increases than \$10 billion a year raise some questions about controls. In 1957, at the time of the principal study of this question that has been made, an increase of about \$20 billion per year could probably have been managed without serious inflationary pressures by raising tax rates to their 1952 level.⁷¹

The effect of higher taxes on incentives with drastic increase in tax rates is uncertain. However, for the moderate increases mentioned above, past U.S. experience and the experience of other countries indicate that incentives would not be greatly impaired. Individual in-

⁷⁰ The modest impact of a \$10 or \$15 billion increase in the national security budget is indicated in the study by Gerhard Colm, "Can We Afford Additional Programs for National Security?," National Planning Association, Washington, D.C., October 1953; see also Gerhard Colm and Manuel Helzner, "General Economic Feasibility of National Security Programs," March 1957, published in "Federal Expenditure Policy for Economic Growth and Stability," hearings before the Subcommittee on Fiscal Policy of the Joint Economic Committee, 85th Cong., 1st sess., U.S. Government Printing Office, Washington, D.C., 1958, pp. 356-364.

⁷¹ *Ibid.*

centives in the U.S. economy appear to have been as great during the Korean war as they are today and were in the 1920's or in the 1930's. However, the growth of inefficient practices within corporations may be more serious. At this point, all we can say is that the risk of damaging incentives and impairing future growth over a considerable range of tax increases seems to be slight, but more study is needed to bound the range. For the increases that have been suggested recently the effects would be small. Finally, if we are forced to go into a large, crash defense program, the urgency of the need is likely to override considerations of long-term incentives to work.

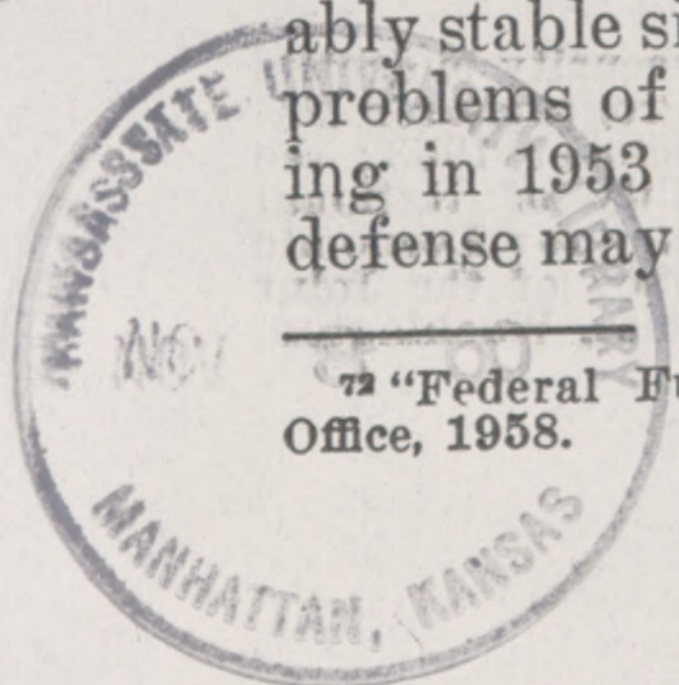
Much of the concern over the level of the defense budgets stems from the view that the resources we allocate to defense yield no economic welfare in the usual sense, that the country is poorer by the amount of the defense budget. In another sense, defense is recognized as contributing to our welfare since by allocating 9 percent of our resources to it, we hope to go on enjoying the other 91 percent. But just how accurate is the dollar total of the defense budget as a measure of the burden the economy carries? The defense budget affects the economy in several different ways, some clearly beneficial and some harmful. Since it takes up so large a proportion of our gross national product, and since there is a possibility that it might again take up much more, it is useful to consider some of these side effects.

There clearly are some defense items that benefit the nondefense economy. This is true of much of the military research and development carried on by the services and by the Atomic Energy Commission. Of the \$10 billion currently being spent on research and development activities in the United States, about \$3 to \$4 billion comes from the Department of Defense and the Atomic Energy Commission.⁷² The defense budget also includes investment in industrial plants, airfields, and communication systems that have immediate or subsequent non-defense uses. And the military services perform a little noticed but quite large educational and training function for society. They train mechanics, electronic technicians, and other specialists who, after a short tour of duty often leave the services for private industry. The total magnitude of these benefits has not been estimated with any care, but they may come to about 15 percent of the defense budget.

Another important side effect is on the stability of the economy. A high level of Government spending tends to dampen swings in the business cycle by maintaining a component of demand for goods in a recession. The policy followed since the outbreak of the Korean war of maintaining a high level of Government spending, offset by taxation in a boom and with sizable deficits in recession, probably leads to a steadier and higher overall utilization of resources in the economy than would otherwise be experienced. This argument does not, of course, depend on defense spending by the Government. The nondefense benefits noted above in research and development and personnel training could be promoted outside of the defense budget.

While the absolute level of defense expenditures has been remarkably stable since the early 1950's, changes in it have on occasion created problems of stability. For example, the reduction in defense spending in 1953 helped to worsen the 1953-54 recession. In the future, defense may turn out to be a more variable sector of the economy than

⁷² "Federal Funds for Science," National Science Foundation, Government Printing Office, 1958.



in the recent past. Over the long run it is highly volatile, and movements in the defense budget are largely autonomous from the point of view of the economy. Much of the effort to reconcile the conflicting goals of a high level of employment of resources with little price and wage inflation means that national economic policy must frequently follow changes in the defense budget.

Finally, there is the interaction between defense spending and economic growth. As mentioned, there is some possibility of an adverse effect on incentives. In addition, a large share of American industry has been partially removed from the competitive private economy. There are good reasons to suspect that defense industries are grossly inefficient compared with nondefense ones, and while this has no directly harmful effects on the rest of the economy, it means that more of our resources must be allocated to defense than would be the case if these industries operated more efficiently. Offsetting this, however, is the favorable influence on growth of the vigorous program of technical research and development carried on by the services and the likely growth-stimulating aspects of the more stable economy fostered by a high, relatively steady level of Government spending. The net effect of defense spending on economic growth as yet remains quite uncertain.

What would be the effect of lower defense budgets? (This might happen as the result of arms control agreements, but it more likely would be the result of a tacit agreement between East and West.) The prosperity of the economy does not depend on defense spending, nor would a drastic reduction cause a depression. We have twice in recent times gone through postwar readjustments without serious difficulty. Such adjustment need not take very long. However, we would have to face the possibility that the Federal Government would have to adopt a more active policy for stabilization and growth than has been necessary in the high-defense-budget 1950's.

Allied defense budgets

Most of the defense objectives of the United States we share with others, and one of the continuing problems we face is not only deciding the level of effort that we and our allies need make but the distribution of the burden. The economic resources of our NATO allies are large and growing rapidly. If the United States is able to spend more on defense, if it is able to contribute handsomely to the defense of Europe and bear by far the largest responsibility for the defense of much of the Far East and Asia, what about the efforts of our NATO allies? The principal argument for defending Europe by the threat of nuclear war is the supposed inferiority of NATO in manpower and resources for conventional warfare. This view, as I have mentioned above, is simply wrong. The NATO countries are more populous, wealthier, and technologically more advanced than the Warsaw Pact countries. However, while NATO has the resources, they are not being adequately employed in its defense. While the United States is spending about 9 percent of its gross national product on defense and the Soviet Union is spending substantially more, most of our allies are spending much less. Many of our allies, including the German Federal Republic in particular, have been spending about 4 percent of the gross national product on their defense; only the United Kingdom has come close to matching our own effort.

This unwillingness of our allies to make sacrifices for their defense stems in large part from the belief, which we encourage, that the defense of Europe is provided by the threat of general thermonuclear war and that the balance of terror will prevent such a war from occurring. As a result, there is less incentive on the part of the Europeans to defend themselves. The reasons we have used to justify our own reduction in nonnuclear arms have persuaded our allies to emulate us, and this in turn throws a still greater burden on our nuclear deterrent capability. The next major military development in Europe may be the creation of independent nuclear forces, which in turn, judging by the experience of the United States and the United Kingdom, will be used as a justification for further defense cuts in non-nuclear armaments.

The argument presented above on the feasibility of larger U.S. defense budgets applies to Western Europe as well. While these countries are not as wealthy as the United States, they are much more so than the Communist countries across the Iron Curtain which seem able to devote two to three times as much of their gross national product to defense. Moreover, most European economies have been growing rapidly, more rapidly in recent years than that of the United States. Many countries in NATO could take on a substantially greater defense load than they now do.

Quite apart from the question of what allocation of the defense burden within the alliance is equitable, an adequate defense of Europe in the 1960's may well call for increased rates of expenditures. Far from suggesting that we reduce our oversea commitments, we should do still more. How much is called for to satisfy the goal of managing a nonnuclear defense of Europe is uncertain. Forces in being strong enough to allow NATO to mobilize its greater economic resources after a war outbreak are needed. If the Soviet Union reduces its non-nuclear forces in being, less extra would be needed in the West.

Our Asian allies are much less able to support the military forces needed for their defense, nor is there any prospect of their being able to do so within the next decade. Of the peripheral countries in Asia, only Japan has the economic strength to support sizable armed forces. For the rest, it has been our policy not only to carry a large part of their defense burden but to aid their economic growth as well, and we undoubtedly should continue with this policy.

B. THE SIGNIFICANCE OF GNP FOR WAR

Until a few years ago the almost universally held doctrine on the defense of the United States was that forces in being were much less important than the war potential of the economy. We had slowly come to believe over the course of 150 years that our military strength resided mostly in the combination of favorable geography and growing relative economic power. And with good reason. Whatever the situation of our allies and friends, we were secure and could mobilize and come to their aid. With the development of nuclear weapons, these basic strengths of the United States have diminished. What role then is left for our economy in modern war?

A general atomic war clearly makes comparisons of economic strength for war mobilization after the outbreak irrelevant. The notion of the "broken-back war" after a large-scale nuclear exchange

fails to take account of the decisive character of a large nuclear exchange and the disruptive effect of nuclear weapons on industrial production and on the logistic support of armies. The atomic phase of a war between major powers would almost certainly determine the outcome, given the great relative power of atomic weapons as compared with conventional armaments.⁷³ By now, we all understand that the atom bomb makes it no longer possible for the United States to enjoy the luxury of practically dispensing with peacetime armies while remaining well defended. It is forces in being at the outset of a general war that count, and our method of fighting World War I and II will not work for world war III.

However, a nation's gross national product still remains a useful measure of its general warmaking potential, not so much for its significance during the war but before. It is a meaningful index of the total stock of resources from which a defense effort can be drawn. It provides a useful overall measure of the burden of supporting a defense program. Whether or not it tells us much about the potential effectiveness of the military forces that might be supported depends on how much time is available for mobilizing these resources for use. Our large gross national product helps us little with respect to the near term.

Our economy has one other important role in connection with general war, the postwar recovery of the Nation. A large war might leave the United States with large surviving population and stock of capital. If our preattack preparations for survival are thorough, we might be able to reconstitute the economy as a functioning whole and rebuild the Nation. In this respect the United States is especially favored. But it should also be noted that the Soviet Union has some of the same advantages as ourselves in this respect. If its stock of fixed capital is smaller, this stock is growing rapidly, and in addition, the Soviet Union has important geographic advantages. Most other countries, including our European NATO allies, would be less likely to recover from heavy nuclear attack. Their gross national products are a poorer index of the power to recover than is ours or the Russians.

If forces in being are needed for all-out war, how about limited war? Would it make sense for the West to attempt to hold every position around the periphery of the Sino-Soviet bloc so strongly that

⁷³ There has been a curious diversity of attitudes toward the nature of modern war in the Soviet Union. (Great diversity on military matters is to be found in the United States as well, but diversity here is to be expected.) If we were to judge Soviet doctrine by most published material, a dangerous thing to do, it would seem to be at variance with the prevailing American view described. For example, in a book published in 1957, "Strategy and Economics," Col. Andrei Lagovskii assumes that NATO would mobilize vast forces and deploy them in theaters of operation and mobilize their economic potentials for a great war production effort. See the review of this book by Oleg Hoeffding, "Strategy and Economics, a Soviet View," *World Politics*, January 1959. One Russian writer has gone further and suggested that nuclear weapons may prolong war:

"Even the appearance of atomic and hydrogen weapons, of medium- and long-range rockets, cannot insure the swift destruction of such massive forces, and consequently a swift conclusion to the war. In fact, the use of these weapons by both sides leads rather to the prolonging of a war, than to its speeding up. Thus, if the past big wars might just as well be short as long, in our epoch, all big wars are inevitably acquiring a more or less long-drawn-out character * * *"

Col. I. Baz, "The Characteristics of Modern War," *Military Herald*, Moscow, June 1958. (Survival, November-December 1959, vol. 1, No. 5.)

On the other hand, the views of several high military and political leaders during the past several years, including Khrushchev, have had a very different character. Khrushchev has referred to pushbutton warfare in which nations would be destroyed quickly; he has depreciated the worth of conventional weapons; he has said that modern weapons would decide the outcome of a major war. It appears that the opinion that counts in the Soviet Union has arrived at the same conclusion with respect to general war as we have.

it could not be dislodged without the need to mobilize forces? This simply cannot be done. The enemy would have some local superiority, and he "might still be tempted to attack in places where his superiority was decisive."⁷⁴ While planning on the mobilization of our economic resources after a nuclear attack no longer makes much sense, the concept of mobilization retains importance in the defense of oversea areas. On the other hand, the defense of peripheral areas cannot be left to our mobilization capability alone. If it could, we and our allies could drastically cut our defense budgets. If we are too weak abroad, we risk the threat of a *fait accompli*, a quick takeover. Or we might find ourselves gradually eased out of weakly held positions. There would be a strong temptation for us simply to cut our losses and not choose the alternative of responding with a costly buildup of our military forces and to use them in some counteraction. In most peripheral areas, we want to have forces on the scene large enough to force the enemy to engage in a major attack if he is to have much of a chance of success and to hold until quickly deployable reserve forces arrive, followed by a mobilization and deployment of still further resources. If he is forced to use nuclear weapons, we stand a good chance of deterring any overt aggression whatsoever. In short, we need both "shield" forces able to hold back attack and we need "tripwires" on the periphery, not so much to set off our strategic retaliation, but to set off our mobilization.

The importance of the mobilization concept, which had been the underlying basis for most U.S. defense planning, has been excessively depreciated in recent years. Paradoxically, some of our preparations still hold to the mobilization concept where it no longer has validity, after a nuclear exchange. It is neglected for those tasks for which it remains of crucial importance, in limited wars and in increasing our preparations for a possible big war. It may well be true, as Herman Kahn has observed, that *the major deterrent to Communist aggression abroad is the possibility that we will respond by greatly increasing our defense budget*, perhaps doubling it or more if the threat is serious enough. Nor should this response be regarded as farfetched. We tripled our defense spending in response to the invasion of South Korea. And we not only increased forces useful in direct combat in Korea but also forces for general war. A similar crisis abroad in the future would very likely see an increase in the full spectrum of our defense capabilities.

We should understand clearly that the conflict between West and East is in good part a conflict in which Government budgets and gross national products are important weapons. This is the case with the growing competition in the granting of foreign aid funds, and most obviously the case with defense budgets. A substantial increase in Communist defense budgets, or its equivalent, an increase in the efficiency of Communist forces is a defeat for the West. And vice versa. In this struggle, it is our greater capacity for allocating resources to defense that makes it reasonable for us to hold to the objectives we do. One of the principal assets of NATO is its potential ability to throw its economic weight around.⁷⁵ The United States is able to support its current defense establishment by allocating about 9 percent of its gross national products to defense; the Soviet Union, supporting a defense

⁷⁴ Dulles, *op. cit.*

⁷⁵ See "Toward a Balanced Defense," William C. Foster, *Orbis*, spring 1959.

establishment of roughly comparable size, has to allocate one and one-half times as much of its resources to defense. NATO, as a whole has roughly a two or three to one advantage in gross national product over the Communist bloc.

However, while we possess this important weapon—and economic deterrent—part of its effectiveness depends on our consciousness of possessing it. If we make it appear that our response to aggression will not include an increase in our defense budget, this important deterrent weapon is weakened.

C. IMPLICATIONS OF COMMUNIST GROWTH

The Soviet Union has a set of economic and military problems that parallels ours. It too has the problem of deterring an attack on its homeland, of extending the umbrella of deterrence over the satellites and China, and of being prepared for limited conflict at the periphery. One way or another its policies must reflect an underlying adherence (not necessarily consistently) to beliefs on general war (e.g., world annihilation, mutual suicide, massive retaliation, etc.) and warfare at the periphery (e.g., nuclear versus nonnuclear conflict). It is not possible here to discuss the scanty evidence on prevailing Russian military doctrines. It seems likely that these doctrines are undergoing rapid change. Finally, the Soviet Union has a problem of deciding, in principle, how to allocate defense and then to work out institutional arrangements for doing this with some efficiency. In short, it has a defense budget problem too.

The Soviet standard of living is still relatively low. At the present time, it would be painful, indeed, for the Soviet Union to give up additional consumption goods for defense, and it would jeopardize future growth significantly should the Soviet sacrifice investment goods. In 1955 its published defense budget was in the neighborhood of 13 percent of its gross national product.⁷⁶ At that time total Soviet gross national product was one-quarter to one-half as large as ours (while its population was about one-sixth larger). There is a bit of a puzzle here since Soviet military forces have been estimated as roughly equivalent to our own.⁷⁷ One possibility is that the Soviet defense budget may have been much larger than has been announced. Another plausible hypothesis is that the Soviet Union is relatively efficient at the production of weapons and the support of military forces. An increase of \$10 billion per year in the Soviet defense budget would probably slow its investment program or significantly reduce consumers' standard of living—because consumption is low at present and there is no slack in the Russian economy. This does not mean that large increases in the near future can be ruled out. Russian willingness to make sacrifices for the nation has been firmly established. In laying

⁷⁶ This estimate is based on an adjustment of the announced Soviet defense budget. The adjustment is made to exclude indirect taxes and to include subsidies. The adjusted total, substantially higher than the unadjusted one, comes closer to describing the actual distribution of resources among end uses. See "A Comparison of Soviet and United States National Product," by Morris Bornstein, published in "Comparisons of the United States and Soviet Economies," Joint Economic Committee, 1959. The wide spread in the estimate of the relative size of the Soviet and U.S. economies is based on the use of Russian versus United States prices. The mix of goods and relative prices in the economies leads to widely disparate estimates. Both are relevant; neither is more "correct" than the other.

⁷⁷ The estimate that the Soviet military effort is roughly comparable with our own comes from the statement by Allen Dulles, Director of the Central Intelligence Agency, to the Joint Committee on Nov. 13, 1959.

out our defense plans, we need to consider the implications of, say, a doubling of the Soviet defense budget even though at a great sacrifice.

A decade hence, however, the sacrifices may be a great deal less. The Soviet Union is growing rapidly. Russian gross national product may increase at 7 percent per year, reaching the neighborhood of \$250 to \$500 billion by 1970. If the current proportion of gross national product were to be devoted to defense, the Soviet defense budget could rise to an equivalent of about \$80 billion, in U.S. prices, by 1970—perhaps twice the current level; by 1975, over \$90 billion.

Large increments in the U.S. defense budget, those well over \$10 billion a year, now and for the next few years would be difficult for the Soviet Union to match, and the upward pressure on the Soviet defense budget would disrupt its rapid growth. If increases in defense now were to be met by reducing current consumption or denying increments to consumption (now expected to be forthcoming out of the 7-year plan), it might aggravate the Soviet problem of providing incentives. Indeed, a great deal of social unrest and disorder might ensue if the Soviet Union attempted a large expansion of its defense activities. A decade or so hence, however, it may not be difficult for them to match our budget increases, for its economic potential will already be well advanced relative to our own. On the contrary, we may be faced with the problem of matching Russian budget increases.

Estimates of the probable economic growth of China and the military implications of this growth are highly uncertain. There is little reliable data on the performance of Chinese economy, and no one is in a position to make any but the most speculative long-range projections. The available figures, however, show a spectacular rate of growth in the output of certain heavy industrial goods in China—steel, coal, cement, oil, electricity, and pig iron, as well as in agriculture, even after the recent reduction in the claimed totals for 1958. The figures show increases of about 25 percent per annum from 1952 to 1957.⁷⁸ And while the base was low it was not insignificant. Chinese heavy industrial output may by now be close to that of Japan and twice that of India.

What can we say about the period from now to 1970? One possibility that we must seriously entertain is that Chinese heavy goods output may expand as rapidly as has that of the Soviet Union and possibly somewhat more so. By 1962, Communist China may have a heavy industrial establishment three or four times as large as that of India and comparable with Japan's. It will bulk very large relative to its Asian neighbors. By the 1970's, if we may speculate that far on such an uncertain matter, China may have an output of heavy industry very much greater than that of Japan, India, and all of the other non-Communist nations bordering China combined. One measure of this potential is that the heavy industrial output of China by 1975 may be roughly comparable to the output of Russia in 1960, and Russia in 1960 is no small threat to the free world. If China does grow to this extent and if it remains as hostile and aggressive as it has been to its non-Communist neighbors and to the United States, then the pressure it could bring to bear over a large area of the free

⁷⁸ Richard H. Moorsteen, "Economic Prospects for Communist China," *World Politics*, January 1959. This section is also based on some unpublished work of Moorsteen.

world is extremely ominous. China will be armed, possibly with nuclear weapons, whereas Japan's willingness to support a defense program is uncertain and many of China's neighbors will be able to support only weak forces from their own resources. The improvement of internal communications inside of China, improved training and education, along with the growth of industrial output, should make China by the 1970's, and for that matter possibly much sooner, a powerful military force to contend with.

What China will do with its economic strength depends on its intentions, and these may be greatly influenced by the growing strength of China relative to its non-Communist neighbors. Some of it will undoubtedly go to improve internal security, increase consumption, not only to support a growing population, but also to increase living standards in order to insure the stability of the regime. This will affect the situation of the Chinese Nationalists, whose first goal is the return to the mainland, and it will affect the loyalties and the calculations of the Overseas Chinese throughout Southeast Asia. A stronger China will also be able to afford more aid to its satellites, North Vietnam and North Korea, and to Communist parties and Communist guerrillas in non-Communist countries. This, plus direct Chinese military pressure in border areas, or overt aggression, could produce extreme military and economic problems for the relatively weak non-Communist states of South Asia.

D. SOME ALTERNATIVE BUDGET TRENDS

The pattern of our spending on defense during the next decade or more might take several different forms. An extrapolation of the trend of the past several years suggests that it might drift gradually downward as a percentage of gross national product. Conceivable, although unlikely, is a sharp reduction. More likely is a sharp increase in response to growing Soviet offensive power in relation to our own, symbolized by the missile "gap." A recognition of the increased difficulties we face in attaining our objectives may lead to a gradual increase, possibly roughly in proportion to our rate of growth of gross national product. Or it might have to grow at a rate corresponding not to our rate of growth, but more like that of the Communist powers. Finally, it might experience a sharp, very large increase during a crisis at some point in the 1960's. Four possible broad trends are described below:

An economy trend.—For example, the maintenance of our defense budget at about 6 percent of gross national product instead of the current 9 percent. This would correspond currently to a budget of about \$30 billion a year. This budget might be associated with the adoption of the minimum deterrence doctrine for general war, possibly with an arms control agreement aimed at stabilizing the strategic balance, at current budget levels. The savings might come partly from a sharp cutback in air defense expenditures and a reduction in the size of our strategic offensive forces. It would rule out any significant expenditures on civil defense. This would probably not be enough for the reduction described, however, for the entire general war budget, as defined in this paper, is well under half of our total defense budget. There would also have to be a reduction in the U.S. commitment to oversea defense. It is possible, but most unlikely, that the

European NATO powers would pay for a larger share of their defense if the United States were to provide the example of a sharp reduction in its own expenditures and if overt Russian aggression were absent. We might approach this lower level more gradually by holding our defense expenditures constant at the present level just over \$40 billion, as we have for several years now, while our gross national product grows. Some of these reductions might be accomplished without comparable reduction in effectiveness through a reallocation of our existing defense budget and through increases in the efficiency in the procurement and operation of our weapons. There is undoubtedly tremendous room for increasing the efficiency of our Defense Establishment, but doing this is an especially intractable problem.

A constant percentage of gross national product budget—at the current rate.—The budget would grow with gross national product at a rate in the neighborhood of 3 to 4 percent a year, an increase now of \$1 to \$2 billion a year. By 1970, this would produce a defense budget of about \$60 billion. What objectives might this budget support? It would make possible selective improvements in each of several areas: Improvements in our strategic offensive power, for example an increase now in the number of protected ballistic missiles we might procure in order to strengthen our power to strike back, or keeping continually airborne some part of our bomber force. In addition, we might undertake the beginning of a civil defense program, and the return from the first real increment of effort here is likely to be quite large. Much could be done with \$300 million a year or so. Finally, we might step up the slow rate of modernization of the equipment of the Army. There are many other possibilities.

A growing percentage of gross national product budget.—This projection is based on the assumption that during the 1960's we may have to increase our budget by an amount largely determined by rapidly growing Communist resources that might be allocated to military forces. That is, the growth rate of the Communist bloc may turn out to be the relevant one if the West is not to see its military power gradually dwindle in relative strength. This might mean an average increase in the neighborhood of 7 percent a year. For the United States in the early 1960's this would come to about \$3 billion a year more each year.⁷⁹ By 1970 the defense budget might total \$80 billion a year. For Western Europe, this trend could mean a total annual defense budget of \$25 billion a year by 1970. Such a budget increase rate could probably be managed in the United States with no increase in taxes out of the expected average increase in Federal tax revenues.

Such increases would go into some combination of the buildup of substantially improved strategic offense forces, active defenses against ballistic missiles (which are expensive), a substantial civil defense program, and larger and better equipped ground, tactical air, and naval forces overseas, and the bolstering of our allies—especially those in Asia.

⁷⁹ The first Rockefeller brothers fund report on our national security recommended an annual increase of this magnitude for the next several fiscal years. See "International Security, the Military Aspect," 1958.

A crisis budget.—The possibilities here range from limited mobilization as in 1950 to very large scale mobilization. It might be triggered by defeat, such as being unceremoniously forced out of Berlin, or by Chinese aggression in Southeast Asia, or Russian aggression in the Middle East, or by a wide range of scarcely predictable situations. Any of these crises could set off a sizable increase in defense budgets. Nor can the possibility of an even more grave situation, one in which the West receives a great setback, be ruled out. Sometime between today and 1970 our defense budget might have to be increased to a level of \$100 billion a year or more. Such a budget might include a massive program of civil and active defense, a much expanded strategic offensive force, greatly increased ground and naval forces, and military aid to our allies on a large scale.

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