

INTRODUCTION

What will the spread of nuclear weapons do to the world? I say 'spread rather than proliferation' because so far nuclear weapons have proliferated only vertically as the major nuclear powers have added to their arsenals. Horizontally, they have spread slowly across countries, and the pace is not likely to change much. Short-term candidates for the nuclear club are not very numerous, and they are not likely to rush into the nuclear military business. Nuclear weapons will nevertheless spread, with a new member occasionally joining the club. Counting India and Israel, membership grew to seven in the first 35 years of the nuclear age. A doubling of membership in this decade would be surprising. Since rapid changes in international conditions can be unsettling, the slowness of the spread of nuclear weapons is fortunate.

Someday the world will be populated by ten or twelve or eighteen nuclear-weapon states (hereafter referred to as nuclear states). What the further spread of nuclear weapons will do to the world is therefore a compelling question.

Most people believe that the world will become a more dangerous one as nuclear weapons spread. The chances that nuclear weapons will be fired in anger or accidentally exploded in a way that prompts a nuclear exchange are finite, though unknown. Those chances increase as the number of nuclear states increase. More is therefore worse. Most people also believe that the chances that nuclear weapons will be used vary with the character of the new nuclear states—their sense of responsibility, inclination toward devotion to the *status quo*, political and administrative competence. If the supply of states of good character is limited as is widely thought, then the larger the number of nuclear states, the greater the chances of nuclear war become. If nuclear weapons are acquired by countries whose governments totter and frequently fall, should we not worry more about the world's destruction than we do now? And if nuclear weapons are acquired by two states that are traditional and bitter rivals, should that not also foster our concern?

Predictions on grounds such as the above point less to likelihoods and more to dangers that we can all imagine. They identify some possibilities among many, and identifying more of the possibilities would not enable one to say how they are likely to unfold in a world made different by the slow spread of nuclear weapons. We want to know both the likelihood that new dangers will manifest themselves and what the possibilities of their mitigation may be. We want to be able to see the future world, so to speak, rather than merely imagining ways in which it may be a better or a worse one. How can we predict more surely? In two ways: by deducing expectations from the structure of the international political system and by inferring expectations from past events and patterns. With those two tasks accomplished in the first part of this paper, I shall ask in the second part whether increases in the number of nuclear states will introduce differences that are dangerous and destabilizing.

I. DETERRENCE IN A BIPOLAR WORLD

The world has enjoyed more years of peace since 1945 than had been known in this century—if peace is defined as the absence of general war among the major states of the world. The Second World War followed the first one within twenty-one years. As of 1980 35 years had elapsed since the Allies' victory over the Axis powers. Conflict marks all human affairs. In the past third of a century, conflict has generated hostility among states and has at times issued in violence among the weaker and smaller ones. Even though the more powerful states of the world have occasionally been direct participants, war has been confined geographically and limited militarily. Remarkably, general war has been avoided in a period of rapid and far-reaching changes—decolonization; the rapid economic growth of some states; the formation, tightening, and eventual loosening of blocs; the development of new technologies; and the emergence of new strategies for fighting guerrilla wars and deterring nuclear ones. The prevalence of peace, together with the fighting of circumscribed wars, indicates a high ability of the post-war international system to absorb changes and to contain conflicts and hostility.

Presumably features found in the post-war system that were not present earlier account for the world's recent good fortune. The biggest changes in the post-war world are the shift from multipolarity to bipolarity and the introduction of nuclear weapons.

The Effects of Bipolarity

Bipolarity has produced two outstandingly good effects. They are seen by contrasting multipolar and bipolar worlds. First, in a multipolar world there are too many powers to permit any of them to draw clear and fixed lines between allies and adversaries and too few to keep the effects of defection low. With three or more powers, flexibility of alliances keeps relations of friendship and enmity fluid and makes everyone's estimate of the present and future relation of forces uncertain. So long as the system is one of fairly small numbers, the actions of any of them may threaten the security of others. There are too many to enable anyone to see for sure what is happening, and too few to make what is happening a matter of indifference.

In a bipolar world, the two great powers depend militarily mainly on themselves. This is almost entirely true at the strategic nuclear level, largely true at the tactical nuclear level, and partly true at the conventional level. In 1978, for example, the Soviet Union's military expenditures were over 90% of the total for the Warsaw Treaty Organization, and those of the United States were about 60% of the total for NATO. With a GNP 30% as large as ours, West Germany's expenditures were 11.5% of the NATO total, and that is the second largest national contribution. Not only do we carry the main military burden within the alliance because of our disproportionate resources but also because we contribute disproportionately from those resources. In fact if not in form, NATO consists of guarantees given by the United States to her European allies and to Canada. The United States, with a preponderance of nuclear weapons and as many men in uniform as the West European states combined, may be able to protect them; they cannot protect her.

Because of the vast differences in the capabilities of member states, the roughly equal sharing of burdens found in earlier alliance systems is no longer possible. The United States and the Soviet Union balance each other by 'internal' instead of 'external' means, relying on their own

capabilities more than on the capabilities of allies. Internal balancing is more reliable and precise than external balancing. States are less likely to misjudge their relative strengths than they are to misjudge the strength and reliability of opposing coalitions. Rather than making states properly cautious and forwarding the chances of peace, uncertainty and miscalculation cause wars. In a bipolar world, uncertainty lessens and calculations are easier to make. The military might of both great powers makes quick and easy conquest impossible for either, and this is clearly seen. To respond rapidly to fine changes in the military balance is at once less important and more easily done.

Second, in the great-power politics of a multipolar world, who is a danger to whom, and who can be expected to deal with threats and problems, are matters of uncertainty. Dangers are diffused, responsibilities blurred, and definitions of vital interest easily obscured. Because who is a danger to whom is often unclear, the incentive to regard all disequilibrating changes with concern and respond to them with whatever effort may be required is weakened. To respond rapidly to fine changes is at once more difficult, because of blurred responsibilities, and more important, because states live on narrow margins. Interdependence of parties, diffusion of dangers, confusion of responses: These are the characteristics of great-power politics in a multi polar world.

In the great-power politics of a bipolar world, who is a danger to whom is never in doubt. Moreover, with only two powers capable of acting on a world scale, anything that happens anywhere is potentially of concern to both of them. Changes may affect each of the two powers differently, and this means all the more that few changes in the world at large or within each other's national realm are likely to be thought irrelevant. Self-dependence of parties, clarity of dangers, certainty about who has to face them: These are characteristics of great-power politics in a bipolar world. Because responsibility is clearly fixed, and because relative power is easier to estimate, a bipolar world tends to be more peaceful than a multipolar world.

Will the spread of nuclear weapons complicate international life by turning the bipolar world into a multipolar one? The bipolar system has lasted more than three decades because no third state has developed capabilities comparable to those of the United States and the Soviet Union. The United States produces about a quarter of the world's goods, and the Soviet Union about half as much. Unless Europe unites, the United States will remain economically well ahead of other states. And although Japan's GNP is fast approaching the Soviet Union's, Japan is not able to compete militarily with the super-powers. A state becomes a great power not by military or economic capability alone but by combining political, social, economic, military, and geographic assets in more effective ways than other states can.

In the old days weaker powers could improve their positions through alliance by adding the strength of foreign armies to their own. Cannot some of the middle states do together what they are unable to do alone? For two decisive reasons, the answer is 'no'. First, nuclear forces do not add up. The technology of warheads, of delivery vehicles, of detection and surveillance devices, of command and control systems, count more than the size of forces. Combining separate national forces is not much help. Second, to reach top technological levels would require full collaboration by, say, several European states. To achieve this has proved politically impossible.

As de Gaulle often said, nuclear weapons make alliances obsolete. At the strategic level he was right.

States fear dividing their strategic labours fully—from research and development through production, planning, and deployment. This is less because one of them might in the future be at war with another, and more because anyone's decision to use the weapons against third parties might be fatal to all of them. Decisions to use nuclear weapons may be decisions to commit suicide. Only a national authority can be entrusted with the decision, again as de Gaulle always claimed. Only by merging and losing their political identities can middle states become great powers. The non-additivity of nuclear forces means that in our bipolar world efforts of lesser states cannot tilt the strategic balance.

Great powers are strong not simply because they have nuclear weapons but also because their immense resources enable them to generate and maintain power of all types, military and other, at strategic and tactical levels. Entering the great-power club was easier when great powers were larger in number and smaller in size. With fewer and bigger ones, barriers to entry have risen. The club will long remain the world's most exclusive one. We need not fear that the spread of nuclear weapons will turn the world into a multipolar one.

The Effects of Nuclear Weapons

Nuclear weapons have been the second force working for peace in the post-war world. They make the cost of war seem frighteningly high and thus discourage states from starting any wars that might lead to the use of such weapons. Nuclear weapons have helped maintain peace between the great powers and have not led their few other possessors into military adventures.⁵ Their further spread, however, causes widespread fear. Much of the writing about the spread of nuclear weapons has this unusual trait: It tells us that what did *no*, happen in the past is likely to happen in the future, that tomorrow's nuclear states are likely to do to one another what today's nuclear states have not done. A happy nuclear past leads many to expect an unhappy nuclear future. This is odd, and the oddity leads me to believe that we should reconsider how weapons affect the situation of their possessors.

The Military Logic of Self-Help Systems

States coexist in a condition of anarchy. Self-help is the principle of action in an anarchic order, and the most important way in which states must help themselves is by providing for their own security. Therefore, in weighing the chances for peace, the first questions to ask are questions about the ends for which states use force and about the strategies and weapons they employ. The chances of peace rise if states can achieve their most important ends without actively using force. War becomes less likely as the costs of war rise in relation to possible gains. Strategies bring ends and means together. How nuclear weapons affect the chances for peace is seen by considering the possible strategies of states.

Force may be used for offence, for defence, for deterrence, and for coercion. Consider offence first. Germany and France before World War 1 provide a classic case of two adversaries each neglecting its defence and both planning to launch major attacks at the outset of war. France

favoured offence over defence, because only by fighting an offensive war could Alsace-Lorraine be reclaimed. This illustrates one purpose of the offence: namely, conquest. Germany favoured offence over defence, believing offence to be the best defence, or even the only defence possible. Hemmed in by two adversaries, she could avoid fighting a two-front war only by concentrating her forces in the West and defeating France before Russia could mobilize and move effectively into battle. This is what the Schlieffen plan called for. The Plan illustrates another purpose of the offence: namely, security. Even if security had been Germany's only goal, an offensive strategy seemed to be the way to obtain it.

The offence may have either or both of two aims: conquest and security. An offence may be conducted in either or in some combination of two ways: preventively or pre-emptively. If two countries are unequal in strength and the weaker is gaining, the stronger may be tempted to strike before its advantage is lost. Following this logic, a country with nuclear weapons may be tempted to destroy the nascent force of a hostile country. This would be preventive war, a war launched against a weak country before it can become disturbingly strong. The logic of pre-emption is different. Leaving aside the balance of forces, one country may strike another country's offensive forces to blunt an attack that it presumes is about to be made. If each of two countries can eliminate or drastically reduce the other's offensive forces in one surprise blow, then both of them are encouraged to mount sudden attacks, if only for fear that if one does not, the other will. Mutual vulnerability of forces leads to mutual fear of surprise attack by giving each power a strong incentive to strike first.

French and German plans for war against each other emphasized prevention over preemption - to strike before enemies can become fully ready to fight, but not to strike at their forces in order to destroy them before they can be used to strike back. Whether pre-emptive or preventive, an offensive first strike is a hard one, as military logic suggests and history confirms. Whoever strikes first does so to gain a decisive advantage. A pre-emptive strike is designed to eliminate or decisively reduce the opponent's ability to retaliate. A preventive strike is designed to defeat an adversary before he can develop and deploy his full potential might. Attacks, I should add, are not planned according to military logic alone. Political logic may lead a country another country to attack even in the absence of an expectation of military victory, as Egypt did in October of 1973.

How can one state dissuade another state from attacking? In either or in some combination of two ways. One way to counter an intended attack is to build fortifications and to muster forces that look forbiddingly strong. To build defences so patently strong that no one will try to destroy or overcome them would make international life perfectly tranquil. I call this the defensive ideal. The other way to inhibit a country's intended aggressive moves is to scare that country out of making them by threatening to visit unacceptable punishment upon it. 'To deter' literally means to stop someone from doing something by frightening him. In contrast to dissuasion by defence, dissuasion by deterrence operates by frightening a state out of attacking, not because of the difficulty of launching an attack and carrying it home, but because the expected reaction of the attacked will result in one's own severe punishment. Defence and deterrence are often confused. One frequently hears statements like this: 'A strong defence in Europe will deter a Russian attack'. What is meant is that a strong defence will dissuade Russia from attacking. Deterrence is achieved not through the ability to defend but through the ability to punish. Purely deterrent

forces provide no defence. The message of a deterrent strategy is this: 'Although we are defenceless, if you attack we will punish you to an extent that more than cancels your gains'. Second-strike nuclear forces serve that kind of strategy. Purely defensive forces provide no deterrence. They offer no means of punishment. The message of a defensive strategy is this: 'Although we cannot strike back, you will find our defences so difficult to overcome that you will dash yourself to pieces against them'. The Maginot Line was to serve that kind of strategy.

States may also use force for coercion. One state may threaten to harm another state not to deter it from taking a certain action but to compel one. Napoleon III threatened to bombard Tripoli if the Turks did not comply with his demands for Roman Catholic control of the Palestinian Holy Places. This is blackmail, which can now be backed by conventional and by nuclear threats.

Do nuclear weapons increase or decrease the chances of war? The answer depends on whether nuclear weapons permit and encourage states to deploy forces in ways that make the active use of force more or less likely and in ways that promise to be more or less destructive. If nuclear weapons make the offence more effective and the blackmailer's threat more compelling, then nuclear weapons increase the chances of war—the more so the more widely they spread. If defence and deterrence are made easier and more reliable by the spread of nuclear weapons, we may expect the opposite result. To maintain their security, states must rely on the means they can generate and the arrangements they can make for themselves. The quality of international life therefore varies with the ease or the difficulty states experience in making themselves secure.

Weapons and strategies change the situation of states in ways that make them more or less secure, as Robert Jervis has brilliantly shown. If weapons are not well suited for conquest, neighbours have more peace of mind. According to the defensive-deterrent ideal, we should expect war to become less likely when weaponry is such as to make conquest more difficult, to discourage pre-emptive and preventive war, and to make coercive threats less credible. Do nuclear weapons have those effects? Some answers can be found by considering how nuclear deterrence and how nuclear defence may improve the prospects for peace.

First, wars can be fought in the face of deterrent threats, but the higher the stakes and the closer a country moves toward winning them, the more surely that country invites retaliation and risks its own destruction. States are not likely to run major risks for minor gains. Wars between nuclear states may escalate as the loser uses larger and larger warheads. Fearing that states will want to draw back. Not escalation but de-escalation becomes likely. War remains possible. but victory in war is too dangerous to fight for. If states can score only small gains because large ones risk retaliation, they have little incentive to fight.

Second, states act with less care if the expected costs of war are low and with more care if they are high. In 1853 and 1854, Britain and France expected to win an easy victory if they went to war against Russia. Prestige abroad and political popularity at home would be gained. if not much else. The vagueness of their plans was matched by the carelessness of their acts. In blundering into the Crimean War they acted hastily on scant information, pandered to their people's frenzy for war, showed more concern for an ally's whim than for the adversary's situation, failed to specify the changes in behaviour that threats were supposed to bring. and inclined towards testing strength first and bargaining second. In sharp contrast, the

presence of nuclear weapons makes States exceedingly cautious. Think of Kennedy and Khrushchev in the Cuban missile crisis. Why fight if you can't win much and might lose everything?

Third, the question demands a negative answer all the more insistently when the deterrent deployment of nuclear weapons contributes more to a country's security than does conquest of territory. A country with a deterrent strategy does not need the extent of territory required by a country relying on a conventional defence in depth. A deterrent strategy makes it unnecessary for a country to fight for the sake of increasing its security, and this removes a major cause of war.

Fourth, deterrent effect depends both on one's capabilities and on the will one has to use them. The will of the attacked, striving to preserve its own territory, can ordinarily be presumed stronger than the will of the attacker striving to annex someone else's territory. Knowing this, the would-be attacker is further inhibited.

Certainty about the relative strength of adversaries also improves the prospects for peace. From the late nineteenth century onwards the speed of technological innovation increased the difficulty of estimating relative strengths and predicting the course of campaigns. Since World War II, technology has advanced even faster, but short of an antiballistic missile (ABM) breakthrough, this does not matter very much. It does not disturb the American-Russian equilibrium because one side's missiles are not made obsolete by improvements in the other side's missiles. In 1906 the British *Dreadnought*, with the greater range and fire power of its guns, made older battleships obsolete. This does not happen to missiles. As Bernard Brodie put it: 'Weapons that do not have to fight their like do not become useless because of the advent of newer and superior types'. They do have to survive their like, but that is a much simpler problem to solve (see discussion below).

Many wars might have been avoided had their outcomes been foreseen. 'To be sure,' Georg Simmel once said, 'the most effective presupposition for preventing struggle, the exact knowledge of the comparative strength of the two parties, is very often only to be obtained by the actual fighting out of the conflict'. Miscalculation causes wars. One side expects victory at an affordable price, while the other side hopes to avoid defeat. Here the differences between conventional-multipolar and nuclear-bipolar worlds are fundamental. In the former, states are too often tempted to act on advantages that are wishfully discerned and narrowly calculated. In 1914, neither Germany nor France tried very hard to avoid a general war. Both hoped for victory even though they believed their forces to be quite evenly matched. In 1941, Japan, in attacking the United States, could hope for victory only if a series of events that were possible but not highly probable took place. Japan would grab resources sufficient for continuing the conquest of China and then dig in to defend a limited perimeter. Meanwhile, the United States and Britain would have to deal with Germany, which, having defeated the Soviet Union, would be supreme in Europe. Japan could then hope to fight a defensive war for a year or two until America, her purpose weakened, became willing to make a compromise peace in Asia.

Countries more readily run the risks of war when defeat, if it comes, is distant and is expected to bring only limited damage. Given such expectations, leaders do not have to be insane to sound the trumpet and urge their people to be bold and courageous in

the pursuit of victory. The outcome of battles and the course of campaigns are hard to foresee because so many things affect them, including the shifting allegiance and determination of alliance members. Predicting the result of conventional wars has proved difficult.

Uncertainty about outcomes does not work decisively against the fighting of wars in conventional worlds. Countries armed with conventional weapons go to war knowing that even in defeat their suffering will be limited. Calculations about nuclear war are differently made. Nuclear worlds call for and encourage a different kind of reasoning. If countries armed with nuclear weapons go to war, they do so knowing that their suffering may be unlimited. Of course, it also may not be. But that is not the kind of uncertainty that encourages anyone to use force. In a conventional world, one is uncertain about winning or losing. In a nuclear world, one is uncertain about surviving or being annihilated. If force is used and not kept within limits, catastrophe will result. That prediction is easy to make because it does not require close estimates of opposing forces. The number of one's cities that can be severely damaged is at least equal to the number of strategic warheads an adversary can deliver. Variations of number mean little within wide ranges. The expected effect of the deterrent achieves an easy clarity because wide margins of error in estimates of probable damage do not matter. Do we expect to lose one city or two, two cities or ten? When these are the pertinent questions, we stop thinking about running risks and start worrying about how to avoid them. In a conventional world, deterrent threats are ineffective because the damage threatened is distant, limited, and problematic. Nuclear weapons make military miscalculations difficult and politically pertinent prediction easy.

Dissuading a would-be attacker by throwing up a good-looking defence may be as effective as dissuading him through deterrence. Beginning with President Kennedy and Secretary of Defense McNamara in the early 1960s, we have asked how we can avoid, or at least postpone, using nuclear weapons rather than how we can mount the most effective defence. NATO's attempt to keep a defensive war conventional in its initial stage may guarantee that nuclear weapons, if used, will be used in a losing cause and in ways that multiply destruction without promising victory. Early use of very small warheads may stop escalation. Defensive deployment, if it should fail to dissuade, would bring small nuclear weapons into use before the physical, political and psychological environment had deteriorated. The chances of de-escalation are high if the use of nuclear weapons is carefully planned and their use is limited to the battlefield. We have rightly put strong emphasis on strategic deterrence, which makes large wars less likely, and wrongly slighted the question of whether nuclear weapons of low yield can effectively be used for defence, which would make any war at all less likely still.

Lesser nuclear states, with choices tightly constrained by scarcity of resources, may be forced to make choices that NATO has avoided, to choose nuclear defence or nuclear deterrence rather than planning to fight a conventional war on a large scale and to use nuclear weapons only when conventional defences are breaking. Increased reliance on nuclear defence would decrease the credibility of nuclear deterrence. That would be acceptable if a nuclear defence were seen to be unassailable. An unassailable defence is fully dissuasive. Dissuasion is what is wanted whether by defence or by deterrence.

The likelihood of war decreases as deterrent and defensive capabilities increase. Whatever the number of nuclear states, a nuclear world is tolerable if those states are able to send convincing deterrent messages: It is useless to attempt to conquer because you will be severely punished. A nuclear world becomes even more tolerable if states are able to send convincing defensive messages: It is useless to attempt to conquer because you cannot. Nuclear weapons and an appropriate doctrine for their use may make it possible to approach the defensive-deterrent ideal, a condition that would cause the chances of war to dwindle. Concentrating attention on the destructive power of nuclear weapons has obscured the important benefits they promise to states trying to coexist in a self-help world.

Why Nations Want Nuclear Weapons

Nations want nuclear weapons for one or more of seven reasons. First, great powers always counter the weapons of other great powers, usually by imitating those who have introduced new weapons. It was not surprising that the Soviet Union developed atomic and hydrogen bombs, but rather that we thought the Baruch-Lilienthal plan might persuade her not to.

Second, a state may want nuclear weapons for fear that its great-power ally will not retaliate if the other great power attacks. Although Britain when she became a nuclear power thought of herself as being a great one, her reasons for deciding later to maintain a nuclear force arose from doubts that the United States could be counted on to retaliate in response to an attack by the Soviet Union on Europe and from Britain's consequent desire to place a finger on our nuclear trigger. As soon as the Soviet Union was capable of making nuclear strikes at American cities, West Europeans began to worry that America's nuclear umbrella no longer ensured that her allies would stay dry if it rained. Hugh Gaitskell, as Leader of the Opposition, could say what Harold Macmillan, as Prime Minister, dared not: 'I do not believe that when we speak of our having to have nuclear weapons of our own it is because we must make a contribution to the deterrent of the West'. As he indicated, no contribution of consequence was made. Instead, he remarked, the desire for a nuclear force derives in large part 'from doubts about the readiness of the United States Government and the American citizens to risk the destruction of their cities on behalf of Europe'. Similar doubts provided the strongest stimulus for France to become a nuclear power.

Third, a country without nuclear allies will want nuclear weapons all the more if some of its adversaries have them. So China and then India became nuclear powers, and Pakistan will probably follow.

Fourth, a country may want nuclear weapons because it lives in fear of its adversaries' present or future conventional strength. This is reason enough for Israel's nuclear weapons, which most authorities assume she either has at hand or can quickly assemble.

Fifth, some countries may find nuclear weapons a cheaper and safer alternative to running economically ruinous and militarily dangerous conventional arms races. Nuclear weapons may promise increased security and independence at an affordable price.

Sixth, countries may want nuclear weapons for offensive purposes. This, however, is an unlikely motivation for reasons given below.

Finally, by building nuclear weapons a country may hope to enhance its international standing. This is thought to be both a reason for and a consequence of developing nuclear weapons. One may enjoy the prestige that comes with nuclear weapons, and indeed a yearning for glory was not absent from de Gaulle's soul. But the nuclear military business is a serious one, and we may expect that deeper motives than desire for prestige lie behind the decision to enter it.

Mainly for reasons two through five, new members will occasionally enter the nuclear club. Nuclear weapons will spread from one country to another in the future for the same reasons they have spread in the past. What effects may we expect?

Relations among Nuclear Nations

In one important way nuclear weapons do change the relations of nations. Adversary states that acquire them are thereby made more cautious in their dealings with each other. For the most part, however, the relations of nations display continuity through their transition from non-nuclear to nuclear status.

Relations between the United States and the new nuclear states were much the same before and after they exploded atomic devices, as Michael Nacht points out. Because America's relations with other nations are based on complex historical, economic, political, and military considerations, they are not likely to change much when lesser parties decide to build nuclear forces. This continuity of relations suggests a certain ambivalence. The spread of nuclear weapons, though dreaded, prompts only mild reactions when it happens. Our 'special relationship' with Britain led us to help her acquire and maintain nuclear forces. The distance tinged with distrust that marks our relations with France led us to oppose France's similar endeavours. China's nuclear forces neither prevented American-Chinese rapprochement earlier nor prompted it later. American-Indian relations worsened when America 'tilted' toward Pakistan during the India-Pakistan War of 1971. India's nuclear explosion in 1974 neither improved nor worsened relations with the United States in the long term. Unlike Canada, we did not deny India access to our nuclear supplies. Again in 1980, President Carter approved shipment of nuclear fuel to India despite her refusal to accept safeguards on all of her nuclear facilities, as required by the Nuclear Non-Proliferation Act of 1978, a provision that the President can waive under certain circumstances. In asking Congress not to oppose his waiving the requirement, the President said this: 'We must do all we reasonably can to promote stability in the area and to bolster our relations with States there, particularly those that can play a role in checking Soviet expansionism'. Nor did Pakistan's refusal to promise not to conduct nuclear tests prevent the United States from proposing to provide military aid after the Soviet Union's invasion of Afghanistan in December of 1979.

Stopping the spread of nuclear weapons has had a high priority for American governments, but clearly not the highest. In practice, other interests have proved to be more pressing. This is evident in our relations with every country that has developed nuclear weapons, or appeared to be on the verge of doing so, from Britain onwards. One may expect that relations of friendship and enmity, that inclinations to help and to hinder, will carry over from the pre- to the post-nuclear relations of nations.

What holds for the United States almost surely holds for the Soviet Union. The Soviet Union has strongly supported efforts to stop the spread of nuclear weapons. She has good reasons to do so. Many potential nuclear states are both nearby and hostile from West Germany through Pakistan to South Korea. Others, like Iraq and India, are nearby and friendly. In international politics, however, friendliness and hostility are transient qualities. No doubt the Soviet Union would prefer conventional to nuclear neighbours whatever their present leanings may be. But also, after the discredit earned in occupying Afghanistan, the Soviet Union would like to repair relations with third-world countries. If we had refused to supply nuclear fuel to India, would the Soviet Union have done so? Secretary of State Edmund Muskie and others thought so. For the Soviet Union, as for the United States, other interests may weigh more heavily than her interest in halting the spread of nuclear weapons.

One may wonder, however, whether the quality of relations changes within alliances as some of their members become nuclear powers. Alliances relate nations to one another in specific and well defined ways. By acquiring nuclear weapons a country is said to erode, and perhaps to wreck, the alliance to which it belongs. In part this statement mistakes effects for causes. Alliances are weakened by the doubts of some countries that another country will risk committing national suicide through retaliation against a nuclear power that attacks an ally. Such doubts caused Britain to remain a nuclear power and France to become one, but it did not destroy NATO. The Alliance holds together because even its nuclear members continue to depend on the United States. They gain strength from their nuclear weapons but remain weak in conventional arms and continue to be vulnerable economically. In an unbalanced world, when the weak feel threatened, they seek aid and protection from the strong. The nuclear forces of Britain and France have their effects on the Alliance without ending dependence on the United States.

Nuclear weapons were maintained by Britain and acquired by France at least in part as triggers for America's strategic deterrent. Given a sense of uncertainty combined with dependence, Europeans understandably strive to fashion their forces so as to ensure our commitment. They also wish to determine the form the commitment takes and the manner of its execution. After all, an American choice about how to respond to threats in Europe is a choice that affects the lives of Europeans and may bring their deaths. Europeans want a large voice in American policies that may determine their destiny. By mounting nuclear weapons. Britain and France hope to decide when we will retaliate against the Soviet Union for acts committed in Europe. Since retaliation risks our destruction, we resist surrendering the decision.

Alliances gain strength through a division of military labour. Within NATO, however, British and French duplication of American strategic nuclear weaponry on a minor scale adds little to the strength of NATO. The most striking division of labour is seen in the different ways European countries seek to influence American policy. Whether or not they are nuclear, lesser powers feeling threatened will turn to, or remain associated with, one or another of the great powers. So long as West European countries fail to increase and concert their efforts, they remain weak and feel threatened. Countries that are weak and threatened will continue to rely on the support of more powerful ones and to hope that the latter will bear a disproportionate share of the burden. West European states have become accustomed to depending on the United States. Relations of dependency are hardest to break where dependent states cannot shift from reliance

on one great power to reliance on another. Under those circumstances, alliances endure even as nuclear weapons spread among their members.

From NATO'S experience we may conclude that alliances are not wrecked by the spread of nuclear weapons among their members. NATO accommodates both nuclear and conventional states in ways that continue to evolve. Past evidence does not support the fear that alliances, which have contributed an element of order to an anarchic world, are threatened by the spread of nuclear weapons. The Soviet Union won't permit the East European countries to become nuclear powers and the United States has accommodated two of her allies doing so, though uneasily in the case of France. The spread of nuclear weapons among members of an alliance changes relations among them without breaking alliances apart.

II. THE FURTHER SPREAD OF NUCLEAR WEAPONS

Contemplating the nuclear past gives grounds for hoping that the world will survive if further nuclear powers join today's six or seven. This tentative conclusion is called into question by the widespread belief that the infirmities of some nuclear states and the delicacy of their nuclear forces will work against the preservation of peace and for the fighting of nuclear wars. The likelihood of avoiding destruction as more states become members of the nuclear club is often coupled with the question *who* those states will be. What are the likely differences in situation and behaviour of new as compared to old nuclear powers?

Nuclear Weapons and Domestic Stability

What are the principal worries? Because of the importance of controlling nuclear weapons—of keeping them firmly in the hands of reliable officials—rulers of nuclear states may become more authoritarian and ever more given to secrecy. Moreover, some potential nuclear states are not politically strong and stable enough to ensure control of the weapons and of the decision to use them. If neighbouring, hostile, unstable states are armed with nuclear weapons, each will fear attack by the other. Feelings of insecurity may lead to arms races that subordinate civil needs to military necessities. Fears are compounded by the danger of internal coups in which the control of nuclear weapons may be the main object of the struggle and the key to political power. Under these fearful circumstances to maintain governmental authority and civil order may be impossible. The legitimacy of the state and the loyalty of its citizenry may dissolve because the state is no longer thought to be capable of maintaining external security and internal order. The first fear is that states become tyrannical; the second, that they lose control. Both these fears may be realized, either in different states or, indeed, in the same state at different times.

What can one say? Four things primarily. First, Possession of nuclear weapons may slow arms races down, rather than speed them up, a possibility considered later. Second, for less developed countries to build nuclear arsenals requires a long lead time. Nuclear power and nuclear weapons programmes, like population policies, require administrative and technical teams able to formulate and sustain programmes of considerable cost that pay off only in the long run. The more unstable a government, the shorter becomes the attention span of its leaders. They have to deal with today's problems and hope for the best tomorrow. In countries where political control is most difficult to maintain, governments are least likely to initiate nuclear-weapons

programmes. In such states, soldiers help to maintain leaders in power or try to overthrow them. For those purposes nuclear weapons are not useful. Soldiers who have political clout, or want it, are less interested in nuclear weapons than they are in more immediately useful instruments of political control. They are not scientists and technicians. They like to command troops and squadrons. Their vested interests are in the military's traditional trappings.

Third, although highly unstable states are unlikely to initiate nuclear projects, such projects, begun in stable times, may continue through periods of political turmoil and succeed in producing nuclear weapons. A nuclear state may be unstable or may become so. But what is hard to comprehend is why, in an internal struggle for power, any of the contenders should start using nuclear weapons. Who would they aim at? How would they use them as instruments for maintaining or gaining control? I see little more reason to fear that one faction or another in some less developed country will fire atomic weapons in a struggle for political power than that they will be used in a crisis of succession in the Soviet Union or China. One or another nuclear state will experience uncertainty of succession, fierce struggles for power, and instability of regime. Those who fear the worst have not shown with any plausibility how those expected events may lead to the use of nuclear weapons.

Fourth, the possibility of one side in a civil war firing a nuclear warhead at its opponent's stronghold nevertheless remains. Such an act would produce a national tragedy, not an international one. This question then arises: Once the weapon is fired, what happens next? The domestic use of nuclear weapons is, of all the uses imaginable, least likely to lead to escalation and to threaten the stability of the central balance. The United States and the Soviet Union, and other countries as well, would have the strongest reasons to issue warnings and to assert control.

Nuclear weapons and regional stability

Nuclear weapons are not likely to be used at home. Are they likely to be used abroad? As nuclear weapons spread, what new causes may bring effects different from and worse than those known earlier in the nuclear age? This section considers five ways in which the new world is expected to differ from the old and then examines the prospects for, and the consequences of, new nuclear states using their weapons for blackmail or for fighting an offensive war.

In what ways may the actions and interactions of new nuclear states differ from those of old nuclear powers? First, new nuclear states may come in hostile pairs and share a common border. Where States are bitter enemies one may fear that they will be unable to resist using their nuclear weapons against each other. This is a worry about the future that the past does not disclose. The Soviet Union and the United States, and the Soviet Union and China, are hostile enough; and the latter pair share a long border. Nuclear weapons have caused China and the Soviet Union to deal cautiously with each other. But bitterness among some potential nuclear states, so it is said, exceeds that experienced by the old ones. Playing down the bitterness sometimes felt by the United States, the Soviet Union, and China requires a creative reading of history. Moreover, those who believe that bitterness causes wars assume a close association that is seldom found between bitterness among nations and their willingness to run high risks.

Second, some new nuclear states may have governments and societies that are not well rooted. If a country is a loose collection of hostile tribes, if its leaders form a thin veneer atop a people partly nomadic and with an authoritarian history, its rulers may be freer of constraints than, and have different values from, those who rule older and more fully developed polities. Idi Amin and Muammar el-Qaddafi fit into these categories, and they are favourite examples of the kinds of rulers who supposedly cannot be trusted to manage nuclear weapons responsibly. Despite wild rhetoric; aimed at foreigners, however, both of these 'irrational' rulers became cautious and modest when punitive actions against them might have threatened their ability to rule. Even though Amin lustily slaughtered members of tribes he disliked, he quickly stopped goading Britain once the sending of her troops appeared to be a possibility. Qaddafi has shown similar restraint. He and Anwar Sadat have been openly hostile since 1973. In July of 1977 both sides launched commando attacks and air raids, including two large air strikes by Egypt on Libya's el Adem airbase. Neither side let the attacks get out of hand. Qaddafi showed himself to be forbearing and amenable to mediation by other Arab leaders. Shai Feldman uses these and other examples to argue that Arab leaders are deterred from taking inordinate risks not because they engage in intricate rational calculations but simply because they, like other rulers, are 'sensitive to costs'.

Many Westerners who write fearfully about a future in which third-world countries have nuclear weapons seem to view their people in the once familiar imperial manner as 'lesser breeds without the law'. As is usual with ethnocentric views, speculation takes the place of evidence. How do we know, someone has asked, that a nuclear-armed and newly hostile Egypt or a nuclear-armed and still hostile Syria would not strike to destroy Israel at the risk of Israeli bombs falling on some of their cities? More than a quarter of Egypt's people live in four cities: Cairo, Alexandria, Giza, and Aswan. More than a quarter of Syria's live in three: Damascus, Aleppo, and Homs. What government would risk sudden losses of such proportion or indeed of much lesser proportion? Rulers want to have a country that they can continue to rule. Some Arab country might wish that some other Arab country would risk its own destruction for the sake of destroying Israel, but there is no reason to think that any Arab country would do so. One may be impressed that, despite ample bitterness, Israelis and Arabs have limited their wars and accepted constraints placed on them by others. Arabs did not marshal their resources and make an all-out effort to destroy Israel in the years before Israel could strike back with nuclear warheads. We cannot expect countries to risk more in the presence of nuclear weapons than they have in their absence.

Third, many fear that states that are radical at home will recklessly use their nuclear weapons in pursuit of revolutionary ends abroad. States that are radical at home, however, may not be radical abroad. Few states have been radical in the conduct of their foreign policy, and fewer have remained so for long. Think of the Soviet Union and the People's Republic of China. States coexist in a competitive arena. The pressures of competition cause them to behave in ways that make the threats they face manageable, in ways that enable them to get along. States can remain radical in foreign policy only if they are overwhelmingly strong—as none of the new nuclear states will be—or if their radical acts fall short of damaging vital interests of nuclear powers. States that acquire nuclear weapons will not be regarded with indifference. States that want to be freewheelers have to stay out of the nuclear business. A nuclear Libya, for example, would have to show caution, even in rhetoric, lest she suffer retaliation in response to someone else's anonymous attack on a third state. That state, ignorant of who attacked, might claim that its

intelligence agents had identified Libya as the culprit and take the opportunity to silence her by striking a conventional or nuclear blow. Nuclear weapons induce caution, especially in weak states.

Fourth, while some worry about nuclear states coming in hostile pairs, others worry that the bipolar pattern will not be reproduced regionally in a world populated by larger numbers of nuclear states. The simplicity of relations that obtains when one party has to concentrate its worry on only one other, and the ease of calculating forces and estimating the dangers they pose, may be lost. The structure of international politics, however, will remain bipolar so long as no third state is able to compete militarily with the great powers. Whatever the structure, the relations of states run in various directions. This applied to relations of deterrence as soon as Britain gained nuclear capabilities. It has not weakened deterrence at the centre and need not do so regionally. The Soviet Union now has to worry lest a move made in Europe cause France and Britain to retaliate, thus possibly setting off American forces. She also has to worry about China's forces. Such worries at once complicate calculations and strengthen deterrence.

Fifth, in some of the new nuclear states, civil control of the military maybe shaky. Nuclear weapons may fall into the hands of military officers more inclined than civilians to put them to offensive use. This again is an old worry. I can see no reason to think that civil control of the military is secure in the Soviet Union given the occasional presence of serving officers in the Politburo and some known and some surmised instances of military intervention in civil affairs at critical times. And in the People's Republic of China military and civil branches of government have been not separated but fused. Although one may prefer civil control, preventing a highly destructive war does not require it. What is required is that decisions be made that keep destruction within bounds, whether decisions are made by civilians or soldiers. Soldiers may be more cautious than civilians. Generals and admirals do not like uncertainty, and they do not lack patriotism. They do not like to fight conventional wars under unfamiliar conditions. The offensive use of nuclear weapons multiplies uncertainties. Nobody knows what a nuclear battlefield would look like, and nobody knows what happens after the first city is hit. *Uncertainty* about the course that a nuclear war might follow, along with the *certainty* that destruction can be immense, strongly inhibits the first use of nuclear weapons.

Examining the supposedly unfortunate characteristics of new nuclear states removes some of one's worries. One wonders why their civil and military leaders should be less interested in avoiding self-destruction than leaders of other states have been. Nuclear weapons have never been used in a world in which two or more states possessed them. Still, one's feeling that something awful will happen as new nuclear powers are added to the present group is not easily quieted. The fear remains that one state or another will fire its weapons in a coolly calculated pre-emptive strike, or fire them in a moment of panic, or use them to launch a preventive war. These possibilities are examined in the next section. Nuclear weapons may also back a policy of blackmail, or be set off anonymously, or be used in a combined conventional-nuclear attack.

Consider blackmail first. Two conditions make for the success of nuclear blackmail. First, when only one country had nuclear weapons, threats to use them had more effect. Thus, President Truman's nuclear threats may have levered the Soviet Union's troops out of Azerbaijan in 1946. Second, if a country has invested troops and suffered losses in a conventional war, its nuclear

blackmail may work. In 1953, Eisenhower and Dulles may have convinced Russia and China that they would widen the Korean War and intensify it by using nuclear weapons if a settlement were not reached. In Korea, we had gone so far that the threat to go further was plausible. The blackmailer's nuclear threat is not a cheap way of working one's will. The threat is simply incredible unless a considerable investment has already been made. Dulles's speech of 12 January 1954 seemed to threaten massive retaliation in response to mildly bothersome actions by others. The successful siege of Dien Bien Pbu in the spring of that year showed the limitations of such threats. Capabilities foster policies that employ them. But monstrous capabilities foster monstrous policies, which when contemplated are seen to be too horrible to carry through. Imagine an Arab state threatening to strike Tel Aviv if the West Bank is not evacuated by Israelis. No state can make the threat with credibility because no state can expect to execute the threat without danger to themselves.

Some have feared that nuclear weapons may be fired anonymously—by radical Arab states, for example, to attack an Israeli city so as block a peace settlement. But the state exploding the warhead could not be sure of remaining unidentified. Even if a country's leaders persuade themselves that chances of retaliation are low, who would run the risk? Once two or more countries have nuclear weapons, the response to nuclear threats, even against non-nuclear states, becomes unpredictable.

Although nuclear weapons are poor instruments for blackmail, would they not provide a cheap and decisive offensive force against a conventionally armed enemy? Some people think that South Korea wants, and that earlier the Shah's Iran had wanted, nuclear weapons for offensive use. Yet one cannot say why South Korea would use nuclear weapons against fellow Koreans while trying to reunite them nor how she could use nuclear weapons against the North, knowing that China and Russia might retaliate. And what goals could a conventionally strong Iran have entertained that would have tempted her to risk using nuclear weapons? A country that takes the nuclear offensive has to fear an appropriately punishing strike by someone. Far from lowering the expected cost of aggression, a nuclear offence even against a non-nuclear state raises the possible costs of aggression to incalculable heights because the aggressor cannot be sure of the reaction of other nuclear powers.

Nuclear weapons do not make nuclear war a likely prospect, as history has so far shown. The point made when discussing the domestic use of nuclear weapons, however, bears repeating. No one can say that nuclear weapons will never be used. Their use, although unlikely, is always possible. In asking what the spread of nuclear weapons will do to the world, we are asking about the effects to be expected as a larger number of relatively weak states get nuclear weapons. If such states use nuclear weapons, the world will not end. And the use of nuclear weapons by lesser powers would hardly trigger them elsewhere, with the US and the USSR becoming involved in ways that might shake the central balance.

Deterrence with Small Nuclear Forces

A number of problems are thought to attend the efforts of minor powers to use nuclear weapons for deterrence. In this section, I ask how hard these problems are for new nuclear states to solve.

The Forces Required for Deterrence

In considering the physical requirements of deterrent forces, we should recall the difference between prevention and pre-emption. A preventive war is launched by a stronger state against a weaker one that is thought to be gaining strength. A pre-emptive strike is launched by one state to blunt an attack that another state is presumably preparing to launch.

The first danger posed by the spread of nuclear weapons would seem to be that each new nuclear state may tempt an old one to strike preventively in order to destroy an embryonic nuclear capability before it can become militarily effective. Because of America's nuclear arsenal, the Soviet Union could hardly have destroyed the budding forces of Britain and France; but the United States could have struck the Soviet Union's early nuclear facilities, and the United States and the Soviet Union could have struck China's. Such preventive strikes have been treated as more than abstract possibilities. When Francis P. Matthews was President Truman's Secretary of the Navy, he made a speech that seemed to favour our waging a preventive war. The United States, he urged, should be willing to pay 'even the price of instituting a war to compel co-operation for peace'.

The United States and the Soviet Union considered making preventive strikes against China early in her nuclear career. Preventive strikes against nuclear installations can also be made by non-nuclear states and have sometimes been threatened. Thus President Nasser warned Israel in 1960 that Egypt would attack if she were sure that Israel was building a bomb. 'It is inevitable', he said, 'that we should attack the base of aggression, even if we have to mobilize four million to destroy it'.

The uneven development of the forces of potential and of new nuclear states creates occasions that seem to permit preventive strikes and may seem to invite them. Two stages of nuclear development should be distinguished. First, a country may be in an early stage of nuclear development and be obviously unable to make nuclear weapons. Second, a country may be in an advanced stage of nuclear development, and whether or not it has some nuclear weapons may not be surely known. All of the present nuclear countries went through both stages, yet until Israel struck Iraq's nuclear facility in June of 1981 no one had launched a preventive strike. A number of reasons combined may account for the reluctance of States to strike in order to prevent adversaries from developing nuclear forces. A preventive strike would seem to be most promising during the first stage of nuclear development. A state could strike without fearing that the country it attacked would return a nuclear blow. But would one strike so hard as to destroy the very potential for future nuclear development? If not, the country struck could simply resume its nuclear career. If the blow struck is less than devastating, one must be prepared to repeat it or to occupy and control the country. To do either would be difficult and costly.

In striking Iraq, Israel showed that a preventive strike can be made, something that was not in doubt. Israel's act and its consequences however, make clear that the likelihood of useful accomplishment is low. Israel's strike increased the determination of Arabs to produce nuclear weapons. Arab states that may attempt to do so will now be all the more secretive and circumspect. Israel's strike, far from foreclosing Iraq's nuclear future, gained her the support of

some other Arab states in pursuing it. And despite Prime Minister Begin's vow to strike as often as need be, the risks in doing so would rise with each occasion.

A preventive strike during the second stage of nuclear development is even less promising than a preventive strike during the first stage. As more countries acquire nuclear weapons, and as more countries gain nuclear competence through power projects, the difficulties and dangers of making preventive strikes increase. To know for sure that the country attacked has not already produced or otherwise acquired some deliverable warheads becomes increasingly difficult. If the country attacked has even a rudimentary nuclear capability, one's own severe punishment becomes possible. Fission bombs may work even though they have not been tested, as was the case with the bomb dropped on Hiroshima. Israel has apparently not tested weapons, yet Egypt cannot know whether Israel has zero, ten, or twenty warheads. And if the number is zero and Egypt can be sure of that, she would still not know how many days are required for assembling components that may be on hand.

Preventive strikes against states that have, or may have, nuclear weapons are hard to imagine, but what about pre-emptive ones? The new worry in a world in which nuclear weapons have spread is that states of limited and roughly similar capabilities will use them against one another. They do not want to risk nuclear devastation anymore than we do. Preemptive strikes nevertheless seem likely because we assume that their forces will be 'delicate'. With delicate forces, states are tempted to launch disarming strikes before their own forces can be struck and destroyed.

To be effective a deterrent force must meet three requirements. First, a part of the force must appear to be able to survive an attack and launch one of its own. Second, survival of the force must not require early firing in response to what may be false alarms. Third, weapons must not be susceptible to accidental and unauthorized use. Nobody wants vulnerable, hair-trigger, accident-prone forces. Will new nuclear states find ways to hide their weapons, to deliver them, and to control them? Will they be able to deploy and manage nuclear weapons in ways that meet the physical requirements of deterrent forces?

The United States even today worries about the vulnerability of its vast and varied arsenal. Will not new nuclear states, slightly and crudely armed, be all the more worried about the survival of their forces? In recent years, we have exaggerated the difficulty of deterrence by shifting attention from situations to weaponry and from weapons systems to their components. Some Americans are concerned about the vulnerability of our strategic system because its land-based component can be struck and perhaps largely destroyed by the Soviet Union in the middle 1980s. If the Soviet Union tried that, we would still have thousands of warheads at sea and thousands of bombs in the air. The Soviet Union could not be sure that we would fail to launch on warning or fail to retaliate later. Uncertainty deters, and there would be plenty of uncertainty about our response in the minds of the Soviet Union's leaders.

In McNamara's day and earlier the term 'counterforce' had a clear and precise meaning. Country *A* was said to have a counterforce capability if by striking first it could reduce country *B*'s missiles and bombers to such small numbers that country *A* would be reluctantly willing to accept the full force of *B*'s retaliation. In this respect, as in others, strategic discourse now lacks the clarity and precision it once had. Whether in a conventional or a nuclear world,

one cannot usefully compare some components of a nation's military forces without taking account of what other components can do. Both the United States and the Soviet Union have strategic nuclear weapons that can destroy some of the other side's strategic nuclear weapons. Neither the United States nor the Soviet Union can reduce the other side's strategic forces to the point where it no longer retains an immense capability for striking at cities and a considerable capability for striking at military targets as well. That we have ten thousand warheads to the Soviet Union's six thousand makes us no worse and no better off than we were when the ratio was even more favourable. That the throw-weight of the Soviet Union's missiles exceeds ours by several times makes us no better and no worse off than it would be were the ratio to be reversed.

Deterrent forces are seldom delicate because no state wants delicate forces and nuclear forces can easily be made sturdy. Nuclear weapons are fairly small and light. They are easy to hide and to move. Early in the nuclear age, people worried about atomic bombs being concealed in packing boxes and placed in holds of ships to be exploded when a signal was given. Now more than ever people worry about terrorists stealing nuclear warheads because various states have so many of them. Everybody seems to believe that terrorists are capable of hiding bombs. Why should states be unable to do what terrorist gangs are thought to be capable of?

It is sometimes claimed that the few bombs of a new nuclear state create a greater danger of nuclear war than additional thousands for the United States and the Soviet Union. Such statements assume that pre-emption of a small force is easy. It is so only if the would-be attacker knows that the intended victim's warheads are few in number, knows their exact number and locations, and knows that they will not be moved or fired before they are struck. To know all of these things, and to know that you know them for sure, is exceedingly difficult. How can military advisers promise the full success of a disarming first strike when the penalty for slight error may be so heavy? In 1962, Tactical Air Command promised that an American strike against Soviet missiles in Cuba would certainly destroy 90% of them but would not guarantee 100%. In the best case a first strike destroys all of a country's deliverable weapons. In the worst case, some survive and can still be delivered.

If the survival of nuclear weapons requires their dispersal and concealment, do not problems of command and control become harder to solve? Americans think so because we think in terms of large nuclear arsenals. Small nuclear powers will neither have them nor need them. Lesser nuclear states might deploy, say, ten real weapons and ten dummies, while permitting other countries to infer that the numbers are larger. The adversary need only believe that some warheads may survive his attack and be visited on him. That belief should not be hard to create without making command and control unreliable. All nuclear countries must live through a time when their forces are crudely designed. All countries have so far been able to control them. Relations between the United States and the Soviet Union, and later among the United States, the Soviet Union, and China, were at their bitterest just when their nuclear forces were in early stages of development, were unbalanced, were crude and presumably hard to control. Why should we expect new nuclear states to experience greater difficulties than the old ones were able to cope with? Moreover, although some of the new nuclear states may be economically and technically backward, they will either have an expert and highly trained group of scientists and engineers or they will not produce nuclear weapons. Even if they buy the weapons, they will have to hire technicians to maintain and control them. We do not have to wonder whether they

will take good care of their weapons. They have every incentive to do so. They will not want to risk retaliation because one or more of their warheads accidentally strikes another country.

Hiding nuclear weapons and keeping them under control are tasks for which the ingenuity of numerous states is adequate. Nor are means of delivery difficult to devise or procure. Bombs can be driven in by trucks from neighbouring countries. Ports can be torpedoed by small boats lying off shore. Moreover, a thriving arms trade in ever more sophisticated military equipment provides ready access to what may be wanted, including planes and missiles suited nuclear warhead delivery

Lesser nuclear states can pursue deterrent strategies effectively. Deterrence requires the ability to inflict unacceptable damage on another country. 'Unacceptable damage' to the Soviet Union was variously defined by Robert McNamara as requiring the ability to destroy a fifth to a fourth of her population and a half to two-thirds of her industrial capacity. American estimates of what is required for deterrence have been absurdly high. To deter, a country need not appear to be able to destroy a fourth to a half of another country, although in some cases that might be easily done. Would Libya try to destroy Israel's nuclear weapons at the risk of two bombs surviving to fall on Tripoli and Benghazi? And what would be left of Israel if Tel Aviv and Haifa were destroyed? The weak can deter one another. But can the weak deter the strong? Raising the question of China's ability to deter the Soviet Union highlights the issue. The population and industry of most States concentrate in a relatively small number of centres. This is true of the Soviet Union. A major attack on the top ten cities of the Soviet Union would get 25% of its industrial capacity and 25% of its urban population. Geoffrey Kemp in 1974 concluded that China would probably be able to strike on that scale. And, I emphasize again, China need only appear to be able to do it. A low probability of carrying a highly destructive attack home is sufficient for deterrence. A force of an imprecisely specifiable minimum capability is nevertheless needed.

In a 1979 study, Justin Galen (pseud.) wonders whether the Chinese have a force physically capable of deterring the Soviet Union. He estimates that China has 60 to 80 medium-range and 60 to 80 intermediate-range missiles of doubtful reliability and accuracy and 80 obsolete bombers. He rightly points out that the missiles may miss their targets even if fired at cities and that the bombers may not get through the Soviet Union's defences. Moreover, the Russians may be able to pre-empt, having almost certainly 'located virtually every Chinese missile, aircraft, weapons storage area and production facility'. But surely Russian leaders reason the other way around. To locate virtually all missiles and aircraft is not good enough. Despite inaccuracies, a few Chinese missiles *may* hit Russian cities, and some bombers *may* get through. Not much is required to deter. What political-military objective is worth risking Vladivostock, Novosibirsk, and Tomsk, with no way of being sure that Moscow will not go as well?

Prevention and pre-emption are difficult games because the costs are so high if the games are not perfectly played. Inhibitions against using nuclear forces for such attacks are strong, although one cannot say they are absolute. Some of the inhibitions are simply human. Can country *A* find justification for a preventive or pre-emptive strike against *B* if *B*, in acquiring nuclear weapons, is imitating *A*? The leader of a country that launches a preventive or preemptive strike courts condemnation by his own people, by the world's people, and by history. Awesome acts are hard to perform. Some of the inhibitions are political. As Bernard Brodie tirelessly and wisely said,

war has to find a political objective that is commensurate with its cost. Clausewitz's central tenet remains valid in the nuclear age. Ultimately, the inhibitions lie in the impossibility of knowing for sure that a disarming strike will totally destroy an opposing force and in the immense destruction even a few warheads can wreak.

The Credibility of Small Deterrent Forces

The credibility of weaker countries' deterrent threats has two faces. The first is physical. Will such countries be able to construct and protect a deliverable force? We have found that they can readily do so. The second is psychological. Will an adversary believe that retaliation threatened will be carried out?

Deterrent threats backed by second-strike nuclear forces raise the expected costs of war to such heights that war becomes unlikely. But deterrent threats may not be credible. In a world where two or more countries can make them, the prospect of *mutual* devastation makes it difficult, or irrational, to execute threats should the occasion for doing so arise. Would it not be senseless to risk suffering further destruction once a deterrent force had failed to deter? Believing that it would be, an adversary may attack counting on the attacked country's unwillingness to risk initiating a devastating exchange by its own retaliation. Why retaliate once a threat to do so has failed? If one's policy is to rely on forces designed to deter, then an attack that is nevertheless made shows that one's reliance was misplaced. The course of wisdom may be to pose a new question: What is the best policy once deterrence has failed? One gains nothing by destroying an enemy's cities. Instead, in retaliating, one may prompt the enemy to unleash more warheads. A ruthless aggressor may strike believing that the leaders of the attacked country are capable of following such a 'rational' line of thought. To carry out the threat that was 'rationally' made may be 'irrational'. This old worry achieved new prominence as the strategic capabilities of the Soviet Union approached those of the United States in the middle 1970s. The Soviet Union, some feared, might believe that the United States would be self-deterred.

Much of the literature on deterrence emphasizes the problem of achieving the credibility on which deterrence depends and the danger of relying on a deterrent of uncertain credibility. One earlier solution to the problem was found in Thomas Schelling's notion of 'the threat that leaves something to chance'. No state can know for sure that another state will refrain from retaliating even when retaliation would be irrational. No state can bet heavily on another state's rationality. Bernard Brodie put the thought more directly, while avoiding the slippery notion of rationality. Rather than ask what it may be rational or irrational for governments to do, the question he asked, and repeated in various ways over the years, was this: How do governments behave in the presence of awesome dangers? His answer was 'very carefully'.

To ask why a country should carry out its deterrent threat once deterrence has failed is to ask the wrong question. The question suggests that an aggressor may attack believing that the attacked country may not retaliate. This invokes the conventional logic that analysts find so hard to forsake. In a conventional world, a country can sensibly attack if it believes that success is probable. In a nuclear world, a country cannot sensibly attack unless it believes that success is assured. An attacker is deterred even if he believes only that the attacked *may* retaliate. Uncertainty of response, not certainty, is required for deterrence because, if retaliation occurs,

one risks losing all. In a nuclear world, we should look less at the retaliators conceivable inhibitions and more at the challenger's obvious risks.

One may nevertheless wonder, as Americans recently have, whether retaliatory threats remain credible if the strategic forces of the attacker are superior to those of the attacked. Will an unsuccessful defender in a conventional war have the courage to unleash its deterrent force, using nuclear weapons first against a country having superior strategic forces? Once more this asks the wrong question. The previous paragraph urged the importance of shifting attention from the defender's possible inhibitions to the aggressor's unwillingness to run extreme risks. This paragraph urges the importance of shifting attention from the defender's courage to the different valuations that defenders and attackers place on the stakes. An attacked country will ordinarily value keeping its own territory more highly than an attacker will value gaining some portion of it. Given second-strike capabilities, it is not the balance of forces but the courage to use them that counts. The balance or imbalance of strategic forces affects neither the calculation of danger nor the question of whose will is the stronger. Second-strike forces have to be seen in absolute terms. The question of whose interests are paramount will then determine whose will is perceived as being the stronger.

Emphasizing the importance of the 'balance of resolve', to use Glenn Snyder's apt phrase, raises questions about what a deterrent force covers and what it does not. In answering these questions, we can learn something from the experience of the last three decades. The United States and the Soviet Union limited and modulated their provocative acts, the more carefully so when major values for one side or the other were at issue. This can be seen both in what they have and in what they have not done. Whatever support the Soviet Union gave to North Korea's initial attack on the South was given after Secretary of State Acheson, the Joint Chiefs of Staff, General MacArthur, and the Chairman of the Senate Foreign Relations Committee all explicitly excluded both South Korea and Taiwan from America's defence perimeter. The United States, to take another example, could fight for years on a large scale in South-East ASia because neither success nor failure mattered much internationally. Victory would not have made the world one of American hegemony. Defeat would not have made the world one of Russian hegemony. No vital interest of either great power was at stake, as both Kissinger and Brezhnev made clear at the time. One can fight without fearing escalation only where little is at stake. And that is where the deterrent does not deter.

Actions at the periphery can safely be bolder than actions at the centre. In contrast, where much is at stake for one side, the other side moves with care. Trying to win where winning would bring the central balance into question threatens escalation and becomes too risky to contemplate. The United States is circumspect when East European crises impend. Thus Secretary of State Dulles assured the Soviet Union when Hungarians rebelled in October of 1956 that we would not interfere with efforts to suppress them. And the Soviet Union's moves in the centre of Europe are carefully controlled. Thus her probes in Berlin have been tentative, reversible, and ineffective. Strikingly, the long border between East and West Europe—drawn where borders earlier proved unstable—has been free even of skirmishes in all of the years since the Second World War.

Both of the nuclear great powers become watchful and wary when events occur that may get out of control. The strikes by Polish workmen that began in August of 1980 provide the most recent

illustration of this. The Soviet Union, her diplomats privately said, was 'determined to find a peaceful solution'. And a senior Carter Administration specialist on the Soviet Union was quoted as follows: 'it is a very explosive situation. Everyone is aware of it, and they are all reluctant to strike a match'. Even though many steps would intervene between workers' strikes and the beginning of any fighting at all in the Centre of Europe, both the Soviet Union and the United States showed great caution from the outset. By political and military logic, we can understand why nuclear weapons induce great caution, and we can confirm that they do by observing the differences of behaviour between great powers in nuclear and great powers in conventional worlds.

Contemplating American and Russian postwar behaviour, and interpreting it in terms of nuclear logic, suggests that deterrence extends to vital interests beyond the homeland more easily than many have thought. The United States cares more about Western Europe than the Soviet Union does. The Soviet Union cares more about Eastern Europe than the United States does. Communicating the weight of one side's concern as compared to the other side's has been easily enough done when the matters at hand affect the United States and the Soviet Union directly. For this reason, Western Europe's anxiety over the coverage it gets from American strategic forces, while understandable, is exaggerated. The United States might well retaliate should the Soviet Union make a major military move against a NATO country, and that is enough to deter.

The Problem of Extended Deterrence

How far from the homeland does deterrence extend? One answers that question by defining the conditions that must obtain if deterrent threats are to be credited. First, the would-be attacker must be made to see that the deterrer considers the interests at stake to be vital ones. One cannot assume that countries will instantly agree on the question of whose interests are vital. Nuclear weapons, however, strongly incline them to grope for *de facto* agreement on the answer rather than to fight over it.

Second, political stability must prevail in the area that the deterrent is intended to cover. If the threat to a regime is in good part from internal factions, then an outside power may risk supporting one of them even in the face of deterrent threats. The credibility of a deterrent force requires both that interests be seen to be vital and that it is the attack from outside that threatens them. Given these conditions, the would-be attacker provides both the reason to retaliate and the target for retaliation. Deterrence gains in credibility the more highly valued the interests covered seem to be.

The problem of stretching a deterrent, which has so agitated the western alliance, is not a problem for lesser nuclear states. Their problem is to protect not others but themselves. Many have feared that lesser nuclear states would be the first to break the nuclear taboo and that they would use their nuclear weapons irresponsibly. I expect just the opposite. Weak states find it easier than strong states to establish their credibility. Not only will they not be trying to stretch their deterrent forces to cover others, but also their vulnerability to conventional attacks lends credence to their nuclear threats. Because in a conventional war they can lose so much so fast, it is easy to believe that they will unleash a deterrent force even at the risk of receiving a nuclear blow in return. With deterrent forces, the party that is absolutely threatened prevails. Use of

nuclear weapons by lesser states will come only if survival is at stake. And this should be called not irresponsible but responsible use.

An opponent who attacks what is unambiguously mine risks suffering great distress if they have second-strike forces. This statement has important implications for both the deterrer and the deterred. Where territorial claims are shadowy and disputed, deterrent writs do not run. As Steven J. Rosen has said: 'It is difficult to imagine Israel committing national suicide to hold on to Abu Rudeis or Hebron or Mount Hermon. Attacks on Israel's occupied lands would be imaginable even if she admitted having nuclear weapons. Establishing the credibility of a deterrent force requires moderation of territorial claims on the part of the would-be deterrer. For modest states, weapons whose very existence works strongly against their use are just what is wanted.

In a nuclear world, conservative would-be attackers will be prudent, but will all would-be attackers be conservative? A new Hitler is not unimaginable. Would the presence of nuclear weapons have moderated Hitler's behaviour? Hitler did not start World War II in order to destroy the Third Reich. Indeed, he was surprised and dismayed by the British and French declaration of war on Poland's behalf. After all, the western democracies had not come to the aid of a geographically defensible and militarily strong Czechoslovakia. Why then should they have declared war on behalf of a less defensible Poland and against a Germany made stronger by the incorporation of Czechoslovakia's armour? From the occupation of the Rhineland in 1936 to the invasion of Poland in 1939, Hitler's calculations were realistically made. In those years, Hitler would almost surely have been deterred from acting in ways that immediately threatened massive death and widespread destruction in Germany. And, if Hitler had not been deterred, would his generals have obeyed his commands? In a nuclear world, to act in blatantly offensive ways is madness. Under the circumstances, how many generals would obey the commands of a madman? One man alone does not make war.

To believe that nuclear deterrence would have worked against Germany in 1939 is easy. It is also easy to believe that in 1945, given the ability to do so, Hitler and some few around him would have fired nuclear warheads at the United States, Great Britain, and the Soviet Union as their armies advanced, whatever the consequences for Germany. Two considerations, however, work against this possibility. When defeat is seen to be inevitable, a ruler's authority may vanish. Early in 1945 Hitler apparently ordered the initiation of gas warfare, but no one responded. The first consideration applies in a conventional world; the second in a nuclear world. In the latter, no country will press another to the point of decisive defeat. In the desperation of defeat desperate measures may be taken, but the last thing anyone wants to do is to make a nuclear nation feel desperate. The unconditional surrender of a nuclear nation cannot be demanded.

Dreaming up situations in which someone may have 'good reason' to strike first has plagued strategic thought ever since Herman Kahn began writing scenarios. Considering one such scenario is worthwhile because it has achieved some popularity among those who believe that deterrence is difficult. Albert Wohlstetter imagines a situation in which the Soviet Union might strike first. Her leaders might decide to do so in a desperate effort to save a sinking regime. The desperation could be produced, Wohlstetter thinks, by 'disastrous defeat in peripheral war', by 'loss of key satellites', by the 'danger of revolt spreading—possibly to Russia itself', or by 'fear

of an attack by ourselves'. Under such circumstances, the risk of *not* striking might appear very great to the Soviets'. Imagination places the Soviet Union in a situation where striking first is bad, but presumably not striking first is even worse.

One common characteristic of scenarios is that they are compounded of odd elements. How can the Soviet Union suffer disastrous defeat in a peripheral war? If the war is peripheral, defeat may be embarrassing, but hardly disastrous. Another common characteristic of scenarios is the failure to say how the imagined act will accomplish the end in view. Some rulers will do anything to save themselves and their regimes. That is the assumption. But how a regime can hope to save itself by making a nuclear strike at a superior adversary, or at any adversary having a second-strike force, is not explained. Why is not striking first even worse than doing so, and in what way does it entail a smaller risk? We are not told. The most important common characteristic of scenarios, and often their fatal flaw, is also present in this one. The scenarist imagines a state in the midst of a terrible crisis in which the alternatives are so bad that launching a first strike supposedly makes some sense, but he does not say how this situation might come about. How could the Soviet Union get into such a mess, and what would other states be doing in the meantime? Scenarios often feature just one player, keeping others in the background even though two or more states are necessarily involved in melting and in preventing wars. To think that the Soviet Union would strike the United States because of incipient revolt within her borders is silly. To think that the Soviet Union would strike first believing that we were about to do so is not. One must then ask how the US would behave if the USSR were seen to be in a perilous condition. It is sometimes surprisingly difficult for strategists to think of the actions and interactions of two or more states at the same time. No country will goad a nuclear adversary that finds itself in sad straits.

When vital interests are at stake, all of the parties involved are strongly constrained to be moderate because one's immoderate behaviour makes the nuclear threats of others credible. No one would want to provoke an already desperate country if that country had strategic nuclear weapons. Equally, a regime in crisis would desperately want to avoid calling nuclear warheads down upon itself. What scenarists imagine seldom has much to do with how governments behave. The bizarre qualities of various scenarios that depict a failure of deterrence strengthens one's confidence in it.

Three confusions mark many discussions of deterrence. First, that nuclear weapons affect the deterrer as well as the deterred is often overlooked. The many who fear that a country will foolishly launch missiles in a moment of panic overlook the care other countries will take in order not to make a nuclear country excessively nervous. Second, those who are sceptical of deterrence easily slip back from nuclear logic, by which slight risk of great damage deters, to conventional logic, by which states may somewhat sensibly risk war on narrowly calculated advantages. Thus some Americans fear that the Soviet Union will strike first—destroying most of our land-based warheads, planes on the ground, submarines in port, and much else besides. The strike would be made on the chance that we would not strike back with some of our thousands of remaining warheads. But states do not risk immense losses unless the odds on succeeding are overwhelmingly high. No one can say what the odds might be. Third, the quality of states' external behaviour is commonly inferred from their internal characteristics. Thus many emphasize the importance of *who* the new nuclear states will be and dwell on the question of

whether their rulers will be 'rational'. They have failed to notice that radical states usually show caution in their foreign policies and to notice that nuclear weapons further moderate the behaviour of such states when vital interests are at issue. Nuclear peace depends not on rulers and those around them being rational but on their aversion to running catastrophic risks.

Arms Races among New Nuclear States

One may easily believe that American and Russian military doctrines have set the pattern that new nuclear states will follow. One may then also believe that they will suffer the fate of the United States and the Soviet Union, that they will compete in building larger and larger nuclear arsenals while continuing to accumulate conventional weapons. These are doubtful beliefs. One can infer the future from the past only insofar as future situations may be like present ones for the actors involved. For four main reasons, new nuclear states are likely to decrease rather than increase their military spending.

First, nuclear weapons alter the dynamics of arms races. In a competition of two or more parties, it may be hard to say who is pushing and who is being pushed, who is leading and who is following. If one party seeks to increase its capabilities, it may seem that the other(s) must too. The dynamic may be built into the competition and may unfold despite a mutual wish to resist it. But need this be the case in a strategic competition between nuclear countries? It need not be if the conditions of competition make deterrent logic dominant. Deterrent logic dominates if the conditions of competition make it nearly impossible for any of the competing parties to achieve a first-strike capability. Early in the nuclear age, the implications of deterrent strategy were clearly seen. 'When dealing with the absolute weapon', as William T. R. Fox put it, 'arguments based on relative advantage lose their point'. The United States has sometimes designed her forces according to that logic. Donald A. Quarles argued when he was Eisenhower's Secretary of the Air Force that 'sufficiency of air power' is determined by 'the force required to accomplish the mission assigned'. Avoidance of total war then does not depend on the '*relative* strength of the two opposed forces'. Instead, it depends on the '*absolute* power in the hands of each, and in the substantial invulnerability of this power to interdiction'. To repeat: If no state can launch a disarming attack with high confidence, force comparisons are irrelevant. Strategic arms races are then pointless. Deterrent strategies offer this great advantage: Within wide ranges neither side need respond to increases in the other side's military capabilities.

Those who foresee nuclear arms racing among new nuclear states fail to make the distinction between war-fighting and war-detering capabilities. War-fighting forces, because they threaten the forces of others, have to be compared. Superior forces may bring victory to one country; inferior forces may bring defeat to another. Force requirements vary with strategies and not just with the characteristics of weapons. With war-fighting strategies, arms races become difficult, if not impossible, to avoid. Forces designed for deterring war need not be compared. As Harold Brown said when he was Secretary of Defense, purely deterrent forces 'can be relatively modest, and their size can perhaps be made substantially, though not completely, insensitive to changes in the posture of an opponent'. With deterrent strategies, arms races make sense only if a first-strike capability is within reach. Because thwarting a first strike is easy, deterrent forces are quite cheap to build and maintain. With deterrent forces, the question is not whether one country has more than another but whether it has the capability of inflicting 'unacceptable damage' on

another, with unacceptable damage sensibly defined. Once that capability is assured, additional strategic weapons are useless. More is not better if less is enough.

Deterrent balances are also inherently stable. if one can say how much is enough, then within wide limits a country can be insensitive to changes in its adversaries' forces. This is the way French leaders have thought. France, as former President Giscard d'Estaing said, 'fixes its security at the level required to maintain, regardless of the way the strategic situation develops in the world, the credibility—in other words, the effectiveness—of its deterrent force'. With deterrent forces securely established, no military need presses one side to try to surpass the other. Human error and folly may lead some parties involved in deterrent balances to spend more on armaments than is needed, but other parties need not increase their armaments in response, because such excess spending does not threaten them. The logic of deterrence eliminates incentives for strategic arms racing. This should be easier for lesser nuclear states to understand than it has been for the US and the USSR. Because most of them are economically hard pressed, they will not want to have more than enough.

Allowing for their particular circumstances, lesser nuclear states confirm these statements in their policies. Britain and France are relatively rich countries, and they tend to overspend. Their strategic forces are nevertheless modest enough when one considers that their purpose is to deter the Soviet Union rather than states with capabilities comparable to their own. China of course faces the same task. These three countries show no inclination to engage in nuclear arms races with anyone. India appears content to have a nuclear military capability that may or may not have produced deliverable warheads, and Israel maintains her ambiguous status. New nuclear states are likely to conform to these patterns and aim for a modest sufficiency rather than vie with each for a meaningless superiority.

Second, because strategic nuclear arms races among lesser powers are unlikely, the interesting question is not whether they will be run but whether countries having strategic nuclear weapons can avoid running conventional races. No more than the United States and the Soviet Union will lesser nuclear states want to rely on the deterrent threat that risks all. And will not their vulnerability to conventional attack induce them continue their conventional efforts?

American policy as it has developed since the early 1960s again teaches lessons that mislead. For almost two decades, we have emphasized the importance of having a continuum of forces that would enable the United States and her allies to fight at any level from irregular to strategic nuclear warfare. A policy that decreases reliance on deterrence increases the chances that wars will be fought. This was well appreciated in Europe when we began to place less emphasis on deterrence and more on defence. The worries of many Europeans were well expressed by a senior British general in the following words: 'McNamara is practically telling the Soviets that the worst they need to expect from an attack on West Germany is a conventional counterattack'. Why risk one's own destruction if one is able to fight on the ground and forgo the use of strategic weapons?

The policy of flexible response lessened reliance on strategic deterrence and increased the chances of fighting a war. New nuclear states are not likely to experience this problem. The expense of mounting conventional defences, and the difficulties and dangers of fighting

conventional wars, will keep most new nuclear states from trying to combine large war-fighting forces with deterrent forces. Disjunction within their forces will enhance the value of deterrence.

Israeli policy seems to contradict these propositions. From 1971 through 1978, both Israel and Egypt spent from 20% to 40% of their GNPs on arms. Israel's spending on conventional arms remains high, although it has decreased since 1978. The decrease followed from the making of peace with Egypt and not from increased reliance on nuclear weapons. The seeming contradiction in fact bears out deterrent logic. So long as Israel holds the West Bank and the Gaza Strip she has to be prepared to fight for them. Since they are by no means unambiguously hers, deterrent threats, whether implicit or explicit, will not cover them. Moreover, while America's large subsidies continue, economic constraints will not drive Israel to the territorial settlement that would shrink her borders sufficiently to make a deterrent policy credible.

From previous points it follows that nuclear weapons are likely to decrease arms racing and reduce military costs for lesser nuclear states in two ways. Conventional arms races will wither if countries shift emphasis from conventional defence to nuclear deterrence. For Pakistan, for example, acquiring nuclear weapons is an alternative to running a ruinous conventional race with India. And deterrent strategies make nuclear arms races pointless.

Finally, arms races in their ultimate form—the fighting of offensive wars designed to increase national security—also become pointless. The success of a deterrent strategy does not depend on the extent of territory a state holds, a point made earlier. It merits repeating because of its unusual importance for states whose geographic limits lead them to obsessive concern for their security in a world of ever more destructive conventional weapons.

The Frequency and Intensity of War

The presence of nuclear weapons makes wars less likely. One may nevertheless oppose the spread of nuclear weapons on the ground that they would make war, however unlikely, unbearably intense should it occur. Nuclear weapons have not been fired in anger in a world in which more than one country has them. We have enjoyed three decades of nuclear peace and may enjoy many more. But we can never have a guarantee. We may be grateful for decades of nuclear peace and for the discouragement of conventional war among those who have nuclear weapons. Yet the fear is widespread, and naturally so, that if they ever go off, we may all die. People as varied as the scholar Richard Smoke, the arms controller Paul Warnke, and former Defense Secretary Harold Brown all believe that if any nuclear weapons go off, many will. Although this seems the least likely of all the unlikely possibilities, it is not impossible. What makes it so unlikely is that, even if deterrence should fail, the prospects for rapid de-escalation are good.

McNamara asked himself what fractions of the Soviet Union's population and industry the United States should be able to destroy in order to deter her. For military, although not for budgetary, strategy this was the wrong question. States are not deterred because they expect to suffer a certain amount of damage but because they cannot know how much damage they will suffer. Near the dawn of the nuclear age Bernard Brodie put the matter simply: 'The prediction is more important than the fact'. The prediction, that is, that attacking the vital interests of a

country having nuclear weapons may bring the attacker untold losses, As Patrick Morgan more recently put it: 'To attempt to "compute" the cost of a nuclear is to miss the point'.

States are deterred by the prospect of suffering severe damage and by their physical inability to do much to limit it. Debate over the Soviet Union's civil defence efforts calls attention to this inability. Defensive measures can reduce casualties, but they would still be immense were either of the great powers launch a determined attack. Moreover, civil defence cannot save the Soviet Union's heavily concentrated industries. Warheads numbered in the hundreds can destroy the United and the Soviet Union as viable societies no matter what defensive measures they take. Deterrence works because nuclear weapons enable one state to punish another state severely without first defeating it. 'Victory', in Thomas Schellings words, 'is no longer a prerequisite for hurting the enemy'. Countries armed only with conventional weapons can hope that their military forces will be able to limit the damage an attacker can do. Among countries armed with strategic nuclear forces, the hope of avoiding heavy damage depends mainly on the attacker's restraint and little on one's own efforts. Those who compare expected deaths through strategic exchanges of nuclear warheads with casualties suffered by the Soviet Union in World War II overlook this fundamental difference between conventional and nuclear worlds.

Deterrence rests on what countries *can* do to each other with strategic nuclear weapons. From this statement, one easily leaps to the wrong conclusion: that deterrent strategies, if they have to be carried through, will produce a catastrophe. That countries are able to annihilate each other means neither that deterrence depends on their threatening to do so nor that they will do so if deterrence fails. Because countries heavily armed with strategic nuclear weapons can carry war to its ultimate intensity, the control of force, in wartime as in peacetime, becomes the primary objective. If deterrence fails, leaders will have the strongest incentives to keep force under control and limit damage rather than launching genocidal attacks. If the Soviet Union should attack Western Europe, NATO'S objectives would be to halt the attack and end the war. The United States has long had the ability to place hundreds of warheads precisely on targets in the Soviet Union. Surely we would strike military targets before striking industrial targets and industrial targets before striking cities. The intent to do so is sometimes confused with a war-fighting strategy, which it is not. It would not significantly reduce the Soviet Union's ability to hurt us. It is a deterrent strategy, resting initially on the threat to punish. The threat, if it fails to deter, is appropriately followed not by spasms of violence but by punishment administered in ways that convey threats to make the punishment more severe.

For several reasons, then, deterrent strategies promise less damage than war-fighting strategies. First, deterrent strategies induce caution all around and thus reduce the incidence of war. Second, wars fought in the face of strategic nuclear weapons must be carefully limited because a country having them may retaliate if its vital interests are threatened. Third, prospective punishment need only be proportionate to an adversary's expected gains in war after those gains are discounted for the many uncertainties of war. Fourth, should deterrence fail, a few judiciously delivered warheads are likely to produce sobriety in the leaders of all of the countries involved and thus bring rapid de-escalation.

A deterrent strategy promises less damage, should deterrence fail, than does the Schlesinger-Brown 'countervailing' strategy, a strategy which contemplates fighting a limited, strategic

nuclear war. War-fighting strategies offer no clear place to stop short of victory for some and defeat for others. Deterrent strategies do, and that place is where one country threatens another's vital interests. Deterrent strategies lower the probability that wars will be fought. If wars are nevertheless fought, deterrent strategies lower the probability that they will become wars of high intensity.

A war between the United States and the Soviet Union that did get out of control would be catastrophic. If they set out to destroy each other, they would greatly reduce the world's store of developed resources while killing millions outside of their own borders through fallout. Even while destroying themselves, states with few weapons would do less damage to others. As ever, the biggest international dangers come from the strongest states. Fearing the world's destruction, one may prefer a world of conventional great powers having a higher probability of fighting less destructive wars to a world of nuclear great powers having a lower probability of fighting more destructive wars. But that choice effectively disappeared with the production of atomic bombs by the United States during World War II. Since the great powers are unlikely to be drawn into the nuclear wars of others, the added global dangers posed by the spread of nuclear weapons are small.

The spread of nuclear weapons threatens to make wars more intense at the local and not at the global level, where wars of the highest intensity have been possible for a number of years. If their national existence should be threatened, weaker countries, unable to defend at lesser levels of violence, may destroy themselves through resorting to nuclear weapons. Lesser nuclear states will live in fear of this possibility. But this is not different from the fear under which the United States and the Soviet Union have lived for years. Small nuclear states may experience a keener sense of desperation because of extreme vulnerability to conventional as well as to nuclear attack, but, again, in desperate situations what all parties become most desperate to avoid is the use of strategic nuclear weapons. Still, however improbable the event, lesser states may one day fire some of their weapons. Are minor nuclear states more or less likely to do so than major ones? The answer to this question is vitally important because the existence of some States would be at stake even if the damage done were regionally confined.

Looking at the situation of weaker nuclear states and at the statements of stronger nuclear states, one suspects that weak states are less likely to use nuclear weapons first than are strong ones. Many have worried about conventional wars between minor nuclear states becoming nuclear wars as one side loses. It is NATO, however, that plans to use nuclear weapons in battle if conventional troops cannot hold. Moreover, after the Soviet Union invaded Afghanistan in December of 1979, American officials considered using nuclear weapons in the Middle East if need be. At various times, some Americans have thought of reasons for making limited counterforce strikes—firing a few missiles at the Soviet Union to show our determination—an idea revived by James R. Schlesinger when he was Secretary of Defense. Among others, Generals Earle G. Wheeler and George Brown, former chairmen of the Joint Chiefs of Staff, have talked of our emerging from a nuclear war with a 'relative advantage' over the Soviet Union by targeting their 'war recovery capabilities'. Presidential Directive 59, signed by President Carter in July of 1980, contemplates fighting a limited nuclear war, perhaps a prolonged one, if deterrence should fail. And some of the Soviet Union's military leaders have publicly discussed using nuclear weapons to win wars.

The United States and the Soviet Union have more readily contemplated the use of nuclear weapons than lesser nuclear states have done or are likely to do. But planning is distinct from deciding to act. Planners think they should offer Presidents a range of choices and a variety of nuclear weapons to carry them through. In the event, Presidents, like Party Chairmen, will shy away from using nuclear weapons and will act with extreme care in dealing with situations that might get out of control, as they have done in the past. New nuclear states are likely to be even more mindful of dangers and more concerned for their safety than some of the old ones have been. Ordinarily, weak states calculate more fearfully and move more cautiously than strong ones. The thought that fear and caution may lead insecure countries to launch pre-emptive strikes has amplified anxieties about the instability of regions populated by lesser nuclear powers and about the extent of destruction their weapons may bring. Such worries rest on inferences drawn from the behaviour of conventional states and do not apply to nuclear ones, for reasons already discussed.

Nuclear weapons lessen the intensity as well as the frequency of war among their possessors. For fear of escalation, nuclear states do not want to fight long or hard over important interests—indeed, they do not want to fight at all. Minor nuclear states have even better reasons than major ones to accommodate one another peacefully and to avoid any fighting. Worries about the intensity of war among nuclear states have to be viewed in this context and against a world in which conventional weapons become ever costlier and more destructive.

The Roles and Reactions of the Great Powers

Should a great power help a lesser one improve on its force once it has shown the will and the ability to build one? Will great powers be drawn into the nuclear confrontations of lesser ones, or will they draw away from them to avoid involvement? Will small nuclear powers cut themselves adrift from the great powers and follow independent policies? Will small countries' nuclear forces trigger an arms race between the great powers? These questions suggest four ways in which big and small nuclear powers may interact.

Small and crude forces tempt pre-emption, so it is thought, and maybe used in reckless and unintended ways because of inadequate command and control. These dangers can be removed by great powers assisting lesser ones in building and managing their forces. Nevertheless, neither the United States nor the Soviet Union will want to help much, lest countries come to believe that they can build insufficient and unreliable forces and rely on one of the great powers to turn them into something substantial. Such hindrance is unfortunate, if improving others' forces serves wider interests. Is help required, not just for the sake of the recipient, but also to avoid nuclear imbalances between states that might prompt wars and to reduce the chances of accidents that might set them off? We saw earlier that these are minor worries. Because they are minor, the United States and the Soviet Union are not likely to be tempted to give technical help to countries entering the nuclear military business.

Nuclear weapons in the hands of six or seven states have lessened wars and limited conflicts. The further spread of nuclear weapons can be expected to widen those effects. Should the United States then promote the spread of nuclear weapons for the sake of peace, even though we need

not for the sake of stability? To do so would replace one extreme policy with another. Present policy works hard to prevent additional states from acquiring nuclear weapons. My examination of the effects of nuclear weapons leads to the conclusion that our policy is wrong without supporting the proposition that true proliferation—the rapid spread of nuclear weaponry—is desirable. Rapid change may be destabilizing. The slow spread of nuclear weapons gives states time to learn to live with them, to appreciate their virtues, and to understand the limits they place on behaviour.

Will the United States and the Soviet Union be drawn into the struggles of lesser nuclear states? This question loses much of its urgency given the aversion of states to crises that raise the spectre of nuclear war and the care they take in crises that do so. Will they then draw away from other states' crises rather than being drawn in? The United States and the Soviet Union will continue to have interests in various parts of the world for all of the old political, economic, and military reasons. In a region where nuclear powers are locked in dispute, the great powers will move cautiously in attempting to tend to their separate and to their common interests. We can hardly expect the United States or the Soviet Union to risk more in other people's crises than they have risked in their own. Neither the United States nor the Soviet Union want a regional nuclear confrontation to become a global one. If that risk hangs over them, their strong mutual interest is to withdraw.

Will lesser nuclear powers want to edge away from their great-power patrons in order to be able to choose their policies more freely? To do so would be risky. A nuclear Israel, for example, may threaten to fire missiles at her attackers' cities if ever their victory in war seems likely. In the face of possible Russian opposition, signs of American acquiescence in Israel's policy would help to make the prospect of retaliation credible. Any lesser power contemplating the use of nuclear weapons even for deterrent or defensive purposes will expect opposition from at least one of the great powers. An alliance or some other kind of connection with one of them may stay the hand of the other. This is another way of saying that even with nuclear weapons weaker states continue to depend on stronger states in various ways.

By acquiring nuclear weapons a state changes one variable in a complex equation of forces. That variable is the most important one. Nuclear weapons increase the ability of states to fend for themselves when the integrity of their legitimate boundaries is at stake. Thus an Israeli deterrent force would enable Israel to maintain her legitimate boundaries while reducing her extreme dependence on the United States. In recent years our aid has amounted to a seventh or an eighth of Israel's GNP yearly. Such dependence will substantially lessen only if military security becomes less of a concern or can be more cheaply provided. Nuclear weapons and strategies, however, do not cover all of the military problems of new nuclear states nor are military problems the whole of their concerns. Israeli dependence on the United States will not disappear so long as she remains a small country in a hostile world. Similarly, the deterrent effect of China's nuclear weapons makes her less dependent on others militarily, without much reducing her need for economic and technical assistance. Nuclear weapons are useful against threats to a state's territorial integrity, but most of the doings of states fall far short of this extreme. Independent nuclear forces reduce dependency by lesser powers on others without eliminating it.

Will the nuclear arms of lesser powers stimulate the great powers to further exertion? And will arms control and disarmament agreements be harder to reach? Consider arms racing first. A faster race between the great powers may come about in the following way, and to some extent already has. The United States or the Soviet Union builds more missiles and more defences against missiles as she perceives a growing threat from China. The increased effort of one of the great powers prompts the other to try harder, and the effects become reciprocating causes. Action, reaction, and over-reaction by the United States and the Soviet Union have formed a pattern too familiar to disregard. The pattern is likely to repeat itself, but it need not.

Consider a historical case. In 1967, McNamara half-heartedly proposed deploying a cheap (\$5-billion) ABM system designed to handle an attack by China even though, as he said, we had 'the power not only to destroy completely her entire nuclear offensive forces, but to devastate her society as well'. Whatever his political and bureaucratic reasons, he publicly argued that a light ABM system offered four advantages:

- 1) China might miscalculate.
- 2) America would be showing Asian states that she would not let China blackmail them and would thus dampen their desires to have their own nuclear weapons.
- 3) America would gain marginal protection for *Minuteman* sites against an attack by the Soviet Union.
- 4) America would be safe against accidental launchings.

Had the United States persisted in building a 'Chinese' system, this might have prompted further efforts by the Soviet Union. The United States and the Soviet Union can react to third countries' nuclear forces in ways that stimulate their own competition in arms, but they need not do so, as is shown by examining McNamara's four reasons. His fourth reason applies to any and all nuclear countries. It raises the question of the value of taking out an ABM insurance policy against accidental firings whether by third countries, by the Soviet Union, or by the United States. His third reason applies explicitly to the Soviet Union and not to third nuclear countries. His second reason rests on a false belief about the feasibility of nuclear blackmail. Only the first of McNamara's reasons applies specifically to the forces of China or of any lesser nuclear country. It raises this question: Under any imaginable circumstances, might a lesser nuclear country's miscalculation lead it to launch an attack on the United States? The miscalculation would have to be monumental. Building missile defences against China would imply that great powers can deter each other but cannot deter minor ones. The weakness of the proposition is apparent.

Nor need more missiles be added to either great power's arsenal in order to deter lesser nuclear powers, even should the great powers fail to deter each other. In 1978, the United States had about 2,150 warheads on land-based launchers, about 5,120 on sea-based launchers, and about 2,580 in bombers. These numbers had changed little by 1980. One study estimates that the Soviet Union's best attack, launched in the mid-1980s and coming at the worst time for us with our forces only on normal day-to-day alert, would leave us with about 6,400 warheads and about 1,800 equivalent megatons. After such an attack, the Soviet Union would have about 6,000 warheads left and 6,000 equivalent megatons. We would still have more than we need since 1,000 *Poseidon* warheads (the force loading of some six submarines) 'can destroy about 75 percent of the Soviet industrial targets'. With our present force we can absorb a first strike and

still destroy the Soviet Union as ‘a modern industrial society’, and do so with missiles to spare for counterforce attacks. And we and they would have more than enough left over to deter third countries. This plenitude of deliverable warheads is sometimes referred to as ‘sufficiency’. The great powers scarcely need get into an arms race because of what lesser powers do.

Still, the United States and the Soviet Union do race from time to time, and the racing has been fuelled in part by what third countries have done. The Soviet Union, for example, argues that many of her intermediate and medium-range ballistic missiles are needed because of the threat posed by China. Some of the NATO countries then conclude that because these missiles threaten Western Europe, cruise missiles and *Pershing IIs* must be deployed there. This then further worries the Soviet Union. No one doubts these effects.

Strategic arms races between the United States and the Soviet Union, however, are produced mainly by the strategies they follow and by the kinds of forces they build. In their strategies, dissuasion by deterrence has always been alloyed with defensive and war-fighting policies and capabilities. The number of Russian cities worth striking is finite and indeed quite low. We have long had more survivable warheads than Russian cities to strike. If only cities were aimed at, many warheads would lack targets. The quantity of warheads on hand and their increased accuracy constitute arguments for a counterforce strategy. In the last two decades, the balance between deterrent strategy and war-fighting strategy has tilted towards the latter. Available weapons affect the strategy a country adopts, and the strategy that is fashioned in turn calls for the further development of weapons. If each side views the other’s strategic forces as designed for fighting wars as much as, or more than, for deterring them, then arms races become very difficult to avoid. Such perceptions vary with changes in the strategies and forces of the great powers, not of the lesser ones. Great powers engage in arms races mainly because of what other great powers do. That was true in a multipolar, conventional world; it remains true in a bipolar, nuclear world.

CONCLUSION

The conclusion is in two parts. After saying what follows for American policy from my analysis, I briefly state the main reasons for believing that the slow spread of nuclear weapons will promote peace and reinforce international stability.

Implications for American Policy

I have argued that the gradual spread of nuclear weapons is better than no spread and better than rapid spread. We do not face a set of happy choices. We may prefer that countries have conventional weapons only, do not run arms races, and do not fight. Yet the alternative to nuclear weapons for some countries may be ruinous arms races with high risk of their becoming engaged in debilitating conventional wars.

Countries have to care for their security with or without the help of others. If a country feels highly insecure and believes that nuclear weapons will make it more secure, America’s policy of opposing the spread of nuclear weapons will not easily determine theirs. Any slight chance of bringing the spread of nuclear weapons to a full stop exists only if the United States and the

Soviet Union constantly and strenuously try to achieve that end. To do so carries costs measured in terms of their other interests. The strongest means by which the United States can persuade a country to forgo nuclear weapons is a guarantee of its security, especially if the guarantee is made credible by the presence of American troops. But how many commitments do we want to make and how many countries do we want to garrison? We are wisely reluctant to give guarantees, but we then should not expect to decide how other countries are to provide for their security. As a neighbour of China, India no doubt feels more secure, and can behave more reasonably, with a nuclear weapons capability than without it. The thought applies as well to Pakistan as India's neighbour. We damage our relations with such countries by badgering them about nuclear weapons while being unwilling to guarantee their security. Under such circumstances they, not we, should decide what their national interests require.

If the United States and the Soviet Union lessen their opposition to the spread of nuclear weapons, will not many states jump on the nuclear bandwagon? Some have feared that weakening opposition to the spread of nuclear weapons will lead numerous states to make them because it may seem that 'everyone is doing it'.

Why should we think that if the United States relaxes, numerous states will begin to make nuclear weapons? Both the United States and the Soviet Union were more relaxed in the past, and these effects did not follow. The Soviet Union initially furthered China's nuclear development. The United States continues to help Britain maintain her deterrent forces. By 1968 the CIA had informed President Johnson of the existence of Israeli nuclear weapons, and in July of 1970 Richard Helms, Director of the CIA, gave this information to the Senate Foreign Relations Committee. These and later disclosures were not followed by censure of Israel or by reductions of assistance to her. And in September of 1980 the Executive Branch, against the will of the House of Representatives but with the approval of the Senate, continued to do nuclear business with India despite her explosion of a nuclear device and despite her unwillingness to sign the Nuclear Non-Proliferation Treaty.

Assisting some countries in the development of nuclear weapons and failing to oppose others has not caused a nuclear stampede. Is the more recent leniency towards India likely to? One reason to think so is that more countries now have the ability to make their own nuclear weapons, more than forty of them according to Joseph Nye.

Many more countries can than do. One can believe that American opposition to nuclear arming stays the deluge only by overlooking the complications of international life. Any state has to examine many conditions before deciding whether or not to develop nuclear weapons. Our opposition is only one factor and is not likely to be the decisive one. Many countries feel fairly secure living with their neighbours. Why should they want nuclear weapons? Some countries feeling threatened, have found security through their own strenuous efforts and through arrangements made with others. South Korea is an outstanding example. Many South Korean officials believe that South Korea would lose more in terms of American support if she acquired nuclear weapons than she would gain by having them. Further, on occasion we might slow the spread of nuclear weapons by *not* opposing the nuclear-weapons programmes of some countries. When we oppose Pakistan's nuclear programme, we are saying that we disapprove of countries developing nuclear weapons no matter what their neighbours do. Failing to oppose Pakistan's

efforts also sends a signal to potential nuclear states, suggesting that if a country develops nuclear weapons, a regional rival may do so as well and may do so without opposition from us. This message may give pause to some of the countries that are tempted to acquire nuclear weapons. After all, Argentina is to Brazil as Pakistan is to India.

Neither the gradual spread of nuclear weapons nor American and Russian acquiescence in this has opened the nuclear floodgates. Nations attend to their security in ways they think best. The fact that so many more countries can make nuclear weapons than do make them says more about the hesitation of countries to enter the nuclear military business than about the effectiveness of American policy. We can sensibly suit our policy to individual cases, sometimes bringing pressure against a country moving towards nuclear-weapons capability and sometimes quietly acquiescing. No one policy is right for all countries. We should ask what our interests in regional peace and stability require in particular instances. We should also ask what the interests of other countries require before putting pressure on them. Some countries are likely to suffer more in cost and pain if they remain conventional states than if they become nuclear ones. The measured and selective spread of nuclear weapons does not run against our interests and can increase the security of some states at a price they can afford to pay.

It is not likely that nuclear weapons will spread with a speed that exceeds the ability of their new owners to adjust to them. The spread of nuclear weapons is something that we have worried too much about and tried too hard to stop.

The Nuclear Future

What will a world populated by a larger number of nuclear states look like? I have drawn a picture of such a world that accords with experience throughout the nuclear age. Those who dread a world with more nuclear states do little more than assert that more is worse and claim without substantiation that new nuclear states will be less responsible and less capable of self-control than the old ones have been. They express fears that many felt when they imagined how a nuclear China would behave. Such fears have proved un-rounded as nuclear weapons have slowly spread. I have found many reasons for believing that with more nuclear states the world will have a promising future. I have reached this unusual conclusion for six main reasons.

First, international politics is a self-help system, and in such systems the principal parties do most to determine their own fate, the fate of other parties, and the fate of the system. This will continue to be so, with the United States and the Soviet Union filling their customary roles. For the United States and the Soviet Union to achieve nuclear maturity and to show this by behaving sensibly is more important than preventing the spread of nuclear weapons.

Second, given the massive numbers of American and Russian warheads, and given the impossibility of one side destroying enough of the other side's missiles to make a retaliatory strike bearable, the balance of terror is indestructible. What can lesser states do to disrupt the nuclear equilibrium if even the mighty efforts of the United States and the Soviet Union cannot shake it? The international equilibrium will endure.

Third, at the strategic level each of the great powers has to gauge the strength only of itself in relation to the other. They do not have to make guesses about the strengths of opposing coalitions, guesses that involve such imponderables as the coherence of diverse parties and their ability to concert their efforts. Estimating effective forces is thus made easier. Wars come most often by miscalculation. Miscalculation will not come from carelessness and inattention in a bipolar world as it may in a multipolar one.

Fourth, nuclear weaponry makes miscalculation difficult because it is hard not to be aware of how much damage a small number of warheads can do. Early in this century Norman Angell argued that wars could not occur because they would not pay. But conventional wars have brought political gains to

some countries at the expense of others. Germans founded a state by fighting three short wars, in the last of which France lost Alsace. Lorraine. Among nuclear countries, possible losses in war overwhelm possible gains. In the nuclear age Angell's dictum, broadly interpreted, becomes persuasive. When the active use of force threatens to bring great losses, war become less likely. This proposition is widely accepted but insufficiently emphasized. Nuclear weapons have reduced the chances of war between the United States and the Soviet Union and between the Soviet Union and China. One may expect them to have similar effects elsewhere. Where nuclear weapons threaten to make the cost of wars immense, who will dare to start them? Nuclear weapons make it possible to approach the deterrent ideal.

Fifth, nuclear weapons can be used for defence as well as for deterrence. Some have argued that an apparently impregnable nuclear defence can be mounted. The Maginot Line has given defence a bad name. It nevertheless remains true that the incidence of wars decreases as the perceived difficulty of winning them increases. No one attacks a defence believed to be impregnable. Nuclear weapons may make it possible to approach the defensive ideal. If so, the spread of nuclear weapons will further help to maintain peace.

Sixth, new nuclear states will confront the possibilities and feel the constraints that present nuclear states have experienced. New nuclear states will be more concerned for their safety and more mindful of dangers than some of the old ones have been. Until recently, only the great and some of the major powers have had nuclear weapons. While nuclear weapons have spread, conventional weapons have proliferated. Under these circumstances, wars have been fought not at the centre but at the periphery of international politics. The likelihood of war decreases as deterrent and defensive capabilities increase. Nuclear weapons, responsibly used, make wars hard to start. Nations that have nuclear weapons have strong incentives to use them responsibly. These statements hold for small as for big nuclear powers. Because they do, the measured spread of nuclear weapons is more to be welcomed than feared.
