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Enhancing Crisis Stability: Correcting the Trend Toward Increasing Instability

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Introduction¹

We live in a dangerous era, when both the United States and the Soviet Union continue to amass nuclear weapons and rely on the threat of their use to deter major war. In such times some encouragement can be found in the repeated expressions by leaders of both countries that they recognize each side would experience catastrophic devastation in a nuclear conflict. The acknowledgement that neither side could escape destruction has been expressed by political leaders ranging from Khrushchev to Gorbachev, from Eisenhower to Reagan. Whatever military leaders and civilian strategists may contemplate as hypothetical contingencies, one observes that politicians of enormously different beliefs, motives, and world views have sensed at a "gut level" that nuclear war as an instrument for achieving political ends makes no sense. Beyond the assurances of their declaratory statements, we have little direct evidence of occasions for decision where Soviet leaders were presented with the option of using nuclear weapons and explicitly rejected the possibility even if it meant accepting possible setbacks, but it certainly is an observable fact that despite various provocations they have not done so even when it meant alienating the Chinese or allowing Egypt to suffer a humiliating defeat. On the American side we know of multiple cases where the idea surfaced and was dismissed (e.g. see Halloran, 1986).

It seems reasonable to conclude that despite occasional flip remarks and endless (and necessary) reexaminations of nuclear deterrence, nuclear war as an acceptable means for achieving policy goals other than political

system survival has been repeatedly rejected in actual cases to date and nuclear war has been widely regarded by political leaders at a more general level of declaratory statements as probably suicidal. Because such beliefs seem very widespread, one might conclude, as many have, that in normal times a nuclear war beginning abruptly as a bolt out of the blue in a calculated attempt to achieve potential political advantage appears extremely remote.

Regrettably other causes of nuclear war seem less remote. Among major categories of nuclear war risk are the following:

- demented dominant political leader with dictatorial control over nuclear forces
- accidental or unauthorized use of nuclear weapons
- crises involving threats to core values of a nuclear power²

Each of these risks of nuclear war deserves careful attention, but this chapter concerns the third.

From the perspective of policy-makers in a country, an international politico-military crisis exists when they perceive a severe threat to the basic values of their political system from sources that are at least partially outside their polity; when they believe there is relatively short time before the situation (if unaltered) will evolve in ways unfavorable to them; and when they have an increased expectation that in the near future there will be an outbreak of military hostilities or a sharp escalation of already existing hostilities.³

The period of extreme antagonism and severe competition that has marked relations between the Soviet Union and the United States since World War II has been punctuated by such crises. In the most recent years there has been no shortage of provocations by either side—the Soviet invasion of Afghanistan, the American insertion of Marines in Lebanon backed by naval and air strikes against Syrian controlled areas, the Soviet shooting down of a civilian airliner with Americans including a Congressman aboard, the American air strikes against Libya or the shooting of a U.S. Major on duty in East Germany by one of their soldiers. Despite such aggressive acts toward one another, these provocations fail to meet our criteria for a major crisis and lead to the observation that recent years have not entailed the kind of episodes that earlier transpired repeatedly over Berlin, or the Cuban missile crisis, or the potential escalation during the 1973 Arab-Israeli War.

The recent lull in politico-military crises between the Soviet Union and the United States may reflect a growing recognition about the great danger of acute crises in a manner somewhat parallel to that surrounding the use of nuclear weapons in war. Yet to date we have witnessed no

wide-spread series of declaratory to the potentially increased danger. We have witnessed practices on both sides that are potentially greater in any future war.

Both the Soviet Union and the United States are engaged in changes in force structure that threaten crisis stability. Given our mutual reliance on nuclear weapons, these developments make crisis stability an even greater concern than it has been in the past.

Crisis stability can be viewed as a function that arises from a country's reliance on nuclear weapons itself and on other valued assets that are vulnerable to threatening capability of strategic nuclear forces. It is to be neutralized or severely eroded by a crisis such as by an initial strike against the enemy targets at which the enemy has the capability that impedes the will or capacity to authorize retaliation. In short, a crisis exists to the degree that they are perceived as credible threats, regardless of the potential adverse effects of a nuclear strike. For this reason, such stability is the vulnerability of strategic nuclear forces to a nuclear challenge (e.g., Steinbruner, 1978). It is a measure of the substantial degree of stability unaffected by a crisis. Thus, crisis stability is the degree to which such situations reduce the stability that exist under normal conditions and are not the result of a nuclear attack.⁴

Crises, as defined, can put strategic nuclear force in several different ways:

1. Crises can expose technical vulnerabilities or features of strategic plans that were not known or had been disregarded. For example, if ICBMs, the process of fueling the missiles had to be initiated. These features could be exposed by the pressures of a crisis.
2. Crises may require, or make necessary, changes in defensive preparations or force posture that are highly susceptible to misinterpretation or escalation intended by the initiator.

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wide-spread series of declaratory statements that reflected a sensitivity to the potentially increased danger of crises and, more critically, we have witnessed practices on both sides that make the risks of nuclear war potentially greater in any future crisis.

Both the Soviet Union and the United States have in the past decade engaged in changes in force structure and doctrine that reduce crisis stability. Given our mutual reliance on some form of nuclear deterrence, these developments make crisis as a path to nuclear war a matter of even greater concern than it has been in the past.

Crisis stability can be viewed as a subset of deterrence stability and arises from a country's reliance on deterrence to prevent attacks on itself and on other valued assets. Deterrence stability requires that the threatening capability of strategic forces not be perceived by either party to be neutralized or severely eroded by actions of a potential adversary such as by an initial strike against those forces, or by effective protection of the enemy targets at which they are aimed, or by some development that impedes the will or capacity of the deterrent country's leadership to authorize retaliation. In short, deterrence forces are stable to the degree that they are perceived as capable of inflicting damaging retaliation regardless of the potential adversary's action such as a counterforce first strike. For this reason, such stability is often simplified to the invulnerability of strategic nuclear forces—a perspective that is open to challenge (e.g., Steinbruner, 1978). A strategic nuclear force that has a substantial degree of stability under normal conditions can be adversely affected by a crisis. Thus, crisis instability can be viewed as the extent to which such situations reduce the deterrence stability perceived to exist under normal conditions and create incentives to initiate a strategic nuclear attack.⁴

Crises, as defined, can put stress or special demands on a deterrent force in several different ways:

1. Crises can expose technical features of the force structure or design features of strategic plans that had not previously been understood or had been disregarded. Thus, in the early days of liquid-fuel ICBMs, the process of fueling missiles was protracted and once fueled the missiles had to be launched within a limited period of time or a refueling process introducing long delays had to be initiated. These features could interact adversely within the time pressures of a crisis.
2. Crises may require, or make very desirable, certain actions—such as defensive preparations or demonstrations of resolve—that are highly susceptible to misinterpretation by the adversary. An action intended by the initiator as a prudent defensive response to a

adversary as provocative and offensive. For a mobilization to show support for interpreted by Germany. The way policy-makers think. The stress cause leaders to believe that they have necessary alone has avenues for de-escalating. ng questions about the merit of plans makers is unpatriotic and dangerous.

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authorities that nuclear war is now rception can be compounded by dis- roup reasoning that sometimes results a crisis. Of particular concern is the upon experiencing severe stress in a that they are helpless and have no ly their opponent has the ability to alternatives that can avert disaster.

are so extremely vulnerable to attack led retaliatory force would survive the ef may result from "worse-case" type tary disadvantage (e.g., a higher than ategic systems or control arrangements e or are discovered to be momentarily gnition for the first time by political known by others) of some of the very apabilities and the doctrines governing on of the above.

e decisive advantage in attacking first belief may be the result of a long- licy (as for the United States in re- tttack by Soviet forces in Europe that NATO non-nuclear defense forces) or of clear war is inevitable, at which point, "... the opponent's nuclear force is m a deterrent into a target, which e damage that will be suffered from

If war is to be avoided by military deterrence, then it is imperative that in situations where policy-makers perceive great threat, short time, and the likelihood of escalating military action that none of the deterrence arrangements designed to avoid war suddenly act in the reserve way and increase the risk. It is precisely this increased risk in a future crisis—that is, greater crisis instability—that recent actions of both the United States and the Soviet Union have generated.

Recent Sources of Crisis Instability⁵

In considerations of crisis stability it is important to review recent and emerging developments and practices of both the Soviet Union and the United States—many of them quite familiar—that affect the context in which any future crisis involving them would occur. At least four areas require review. They are: changes in the characteristics of strategic weapons, changes in strategic alerts, changes in command and control of nuclear weapons, and changes in strategic plans. Clearly there are connections among these developments, but with respect to crisis stability, each can be viewed as producing some separate effects.

Weapons Systems Characteristics

A discussion of changes in the inventory of strategic weapons of greatest salience to crisis stability might reasonably begin with the American deployment in the early 1970s of MIRVs (Multiple Independently-targeted Reentry Vehicles), which are now deployed by both sides in sufficient numbers and are combined with substantial improvements in warhead accuracy to pose a threat to the survivability of fixed-base ICBMs. The resulting "hard-target kill capability," or ability to destroy with substantial probability hardened missile silos, has put a major portion of each side's strategic force at risk from the other side's possible first strike involving only a portion of its total strategic forces.

MIRVed and highly accurate systems such as the Minuteman IIIs, MXs, Trident D-5s, SS-18s and SS-19s produce a greater pressure on policy-makers than in earlier post-World War II crises for preemptive attack if the likelihood of nuclear war seems pronounced. Because both sides have ICBMs at risk, each will be attempting to calculate whether the other side may be planning to preempt. As a result there will be an increased tendency to interpret any ambiguous military activities as indications of preemption that in turn could trigger decisions to use one's own weapons before they are destroyed.

In recent years the Soviet Union has led the way in the development of antisatellite (ASAT) rockets designed to destroy satellites in space.

Just as the Soviet Union followed the United States in MIRV development, so the United States has followed the USSR's initiative in the pursuit of an ASAT system. ASAT capability on both sides appears unperfected at present. Even if improved, the present generation of such weapons would appear to threaten only low orbit satellites or those in highly elliptical orbits. Although most U.S. strategic satellites are stationed in very high orbit, both countries maintain numerous low orbit military satellites of great importance for intelligence purposes and these systems could be vulnerable in the near future. According to Garwin and his associates (1984: 47): "The ability to destroy low-orbit military satellites, coupled with the fear that the opponent may at any moment attack one's own satellites, could therefore create an irresistible temptation to remove the opponent's satellites. As a consequence the ability to destroy low-orbit satellites promptly could inflame a political crisis or minor conflict that might otherwise have been resolved by diplomacy if there were no antisatellite weapons."

Clearly the destruction of satellites at any time, and particularly during a crisis, would be regarded as a violation of existing treaties and an act of extreme provocation. Even without actual attacks, the knowledge of the presence of antisatellite weapons on both sides will compound tensions in a future crisis. The existence of a substantial antisatellite capability would be perceived as reducing stability in a crisis regardless of whether such weapons were used. Like land-based ICBMs in silos, satellites have become vulnerable, particularly those in low earth orbit.

Optimally the momentous decision about the use of nuclear weapons should be taken under circumstances that promote thoughtful reflection and analysis. The magnitude of the consequences certainly separate this potential decision from all others. Yet both the United States and the Soviet Union push the development and deployment of weapons systems that continuously erode available decision time. Current ICBMs take 25 to 30 minutes to reach most targets in the other country from their present sites. Both sides have available missile systems that reduce warning time to well under ten minutes by the use of submarine-launched ballistic missiles (SLBMs) that traverse much shorter distances from their location in off-shore subs. Pershing IIs and, for European members of NATO, the SS-20s pose equivalent decision-time reducing systems.

The ultimate decision-time reducer will be weapons designed to attack ICBMs or SLBMs in their boost phase. For the present generation of ICBMs, the boost phase begins when the main rocket engines start firing just before lift-off and ends when the final stage rocket engines shut off—an elapsed time of three to five minutes. Both sides are currently

working on systems designed to destroy missiles (perhaps up to the boost phase, the defensive system would track their flight paths, launch interceptors, and determine what damage was done for possible retaliation within minutes. Clearly no human decision is possible in a highly restricted time frame. It would be difficult to determine whether a missile launch was a false alarm, a defective sensor, or a defective missile. Its use in a crisis but could also plunge opponents into a state of greater escalation. Severe consequences would be required by policy-makers that the other side would have automated system control over the system. The possibility of involving the detonation of nuclear weapons in the system *would work* and believe that the system is inevitable, he would know that the consequences would be massively overwhelming. Both sides have systems designed to attack missile support equipment as prime targets to encourage preemption. Furthermore, the existence in a crisis of the defense system would be an acute opportunity or vulnerability. If one side believes that both sides know a system *cannot work* effectively against a target, the system is deployed anyway, then the advantage of a first-strike strategy. It would reduce the number of launched enemy missiles and the impact of a strike. Such beliefs would reduce the decision time by the side not having the system.

In summary, there are some dangers associated with these new weapons systems. The first and second are the second and third order effects. If policy-makers take other steps to reduce the decision time, they seriously reduce stability in a future crisis. It is that every new strategic weapon system reduces crisis stability. A mobile, single warhead system, for example, would not appear to be as vulnerable as the system described above.

Strategic Alerts in an Era of Essential

On three occasions since 1945, the United States has moved its military forces on an increase

the United States in MIRV development, and the USSR's initiative in the pursuit of parity on both sides appears unperfected. The present generation of such weapons includes low orbit satellites or those in highly elliptical orbits. U.S. strategic satellites are stationed in orbit to maintain numerous low orbit military satellites for intelligence purposes and these systems will be in the future. According to Garwin and his colleagues, to destroy low-orbit military satellites, the opponent may at any moment attack and create an irresistible temptation to use a consequence the ability to destroy satellites could inflame a political crisis or minor crisis that has been resolved by diplomacy if there

satellites at any time, and particularly those that are perceived as a violation of existing treaties. Even without actual attacks, the presence of satellite weapons on both sides will create a crisis. The existence of a substantial number of satellites perceived as reducing stability in a crisis if weapons were used. Like land-based systems, some are vulnerable, particularly those in

discussion about the use of nuclear weapons systems that promote thoughtful reflection on the consequences certainly separate this from the use of nuclear weapons. Yet both the United States and the USSR have deployed weapons systems that reduce decision time. Current ICBMs take 25 minutes to reach the other country from their launch sites. Available missile systems that reduce decision time by the use of submarine-launched ballistic missiles that traverse much shorter distances than ICBMs. Pershing IIs and, for European theater, Poseidon are equivalent decision-time reducing

weapons designed to attack missiles in their boost phase. For the present generation of ICBMs, the main rocket engines start firing about 30 seconds after the final stage rocket engines shut down, five minutes. Both sides are currently

working on systems designed to attack missiles in their boost phase. To destroy missiles (perhaps up to 1400 in a full scale attack) in the boost phase, the defensive systems must identify rocket launches, track their flight paths, launch interceptor beams or projectiles, and assess what damage was done for possible second efforts—all in under five minutes. Clearly no human decision-making can be introduced in such a highly restricted time frame. In such circumstances computers must determine whether a missile launch is only a test, a manned space mission, or a defective sensor. Its malfunction could not only precipitate a crisis but could also plunge opponents in an existing crisis into vastly greater escalation. Severe consequences could flow from the perception by policy-makers that the other side intended to relinquish to an automated system control over the initiation of strategic defense—possibly involving the detonation of nuclear devices. If the adversary believed the system *would work* and believed in a crisis that war seemed increasingly inevitable, he would know that his first strategic move would have to be massively overwhelming. Both sides would regard the space-based systems designed to attack missiles in their boost phase and the related support equipment as prime targets for ASAT attacks and would encourage preemption. Furthermore, both sides would regard any evidence in a crisis of the defense system's temporary malfunction as a period of acute opportunity or vulnerability. If, on the contrary, an adversary believes that both sides know a strategic defense against ballistic missiles *cannot work* effectively against a large-scale attack and such a system is deployed anyway, then the adversary will assume the defense is part of a first-strike strategy. It would be used against the presumably small number of launched enemy missiles that escaped destruction in the first strike. Such beliefs would reduce crisis stability and encourage preemption by the side not having the system.⁶

In summary, there are some discernible direct effects on crisis stability from these new weapons systems, but the most significant consequences are the second and third order effects. To deal with these weapons, policy-makers take other steps or form new mental images that, in turn, seriously reduce stability in a future crisis. It is important to recognize that every new strategic weapon system does not necessarily erode crisis stability. A mobile, single warhead missile or strategic bomber, for example, would not appear to have such grave effects as those systems described above.

Strategic Alerts in an Era of Essential Equivalence

On three occasions since 1960, the United States has put its global military forces on an increased alert status during a crisis with the

Soviet Union. These include the collapse of the summit conference in May 1960, the Cuban Missile crisis in October-November 1962, and the final days of the Middle East War in October 1973 (See Sagan, 1985). Not much comparable information appears to be publicly available regarding the Soviet Union. To date, however, it does seem that the United States and the USSR have not put their worldwide strategic forces on a very high alert at the same time. The basic military purpose of an increase in strategic alert status is to heighten the preparedness for war by taking steps to reduce the time between a subsequent order to use force and the actual initiation of coordinated military action. At least, the United States has demonstrated its willingness to use a heightened alert status as a means of signaling to the other side quickly and dramatically its resolve to protect threatened vital interests. Clearly that was the intent of the American alert during the Yom Kippur War: to signal rapidly that the U.S. would regard the introduction of Soviet troops into Egypt as contrary to U.S. vital interests. (For a discussion of this strategic alert, see Blechman and Hart, 1982; and Kissinger, 1982.)

Whether the Soviet Union's leadership will elect to follow the American precedent and use an increase in strategic alert status as a means of signaling in a future crisis is unknowable, but the mutual perception of the increased size and relative capabilities of present Soviet strategic forces, as compared to 1973, might invite such action. At a minimum, Soviet leaders may feel they can no longer allow the Americans to engage in such escalation without a comparable response to curb bluffs and communicate that they are equally prepared to defend their vital interests.

If heightened strategic alert status in some superpower crises is to be expected, and is perhaps necessary, that does not alter its implications for crisis stability. This is particularly true if the escalated levels of strategic readiness are mutual. In an acute crisis the American president (and perhaps his Soviet counterpart) could be expected to delegate authority to initiate use of nuclear weapons down the chain of command. This action would be a necessary precaution against a possible enemy attempt to immobilize the strategic system by instantly killing the President, Secretary of Defense, Chairman of the Joint Chiefs and those in the constitutional line of presidential succession with a very small number of nuclear weapons. In contrast to the normal peace time disposition of managers of the strategic system to disbelieve and check repeatedly any information indicating an incoming attack has been launched, in crisis such messages become more credible. Because the authority to initiate use of nuclear weapons would be dispersed, more individuals would be in a position to make separate and independent

judgments that this time the most sensitive with submarines boats have no physical constraints the boats' crews themselves and communication while making each side's alert preparations would by the other side. (Quick detection United States went to a higher level its resolve.) The temptation to a still higher state of one's own work in the two systems but the psychological group of policy-makers, each with

At higher alert levels in a crisis will occur—either unauthorized that will be misconstrued by the other to a commitment to attack. In the actions occurred. With mutual tolerance of such events could be

Finally, simultaneous high level orchestrating de-escalations back such action by one side would advantages.⁸

Command and Control of Nuclear

The command and control of nuclear control, communications and intelligence increased attention in recent years (e.g., Blair, 1985). With respect to control issues seem paramount:

- Elements of command and control elements of the strategic system
- Highly centralized control of authority poses an exception

Command and Control Vulnerability results from numerous factors elements of the system (e.g., satellite exchanges) to the uncertain effectiveness of electronic equipment the ability of the electromagnetic nuclear explosion to create harmful

collapse of the summit conference in October-November 1962, and the crisis in October 1973 (See Sagan, 1985). Information appears to be publicly available on the date, however, it does seem that the two sides have not put their worldwide strategic status on the same time. The basic military purpose of the status is to heighten the preparedness for the time between a subsequent order for the execution of coordinated military action. At the time demonstrated its willingness to use a variety of signaling to the other side quickly to protect threatened vital interests. Clearly, the status was an alert during the Yom Kippur War: it would regard the introduction of Soviet nuclear weapons as U.S. vital interests. (For a discussion of the status see Herman and Hart, 1982; and Kissinger,

which leadership will elect to follow the American strategic alert status as a means of deterrence is knowable, but the mutual perception of the capabilities of present Soviet strategic status do not invite such action. At a minimum, the status no longer allow the Americans to demand a comparable response to curb bluffs or to be equally prepared to defend their vital

status in some superpower crises is to be wary, that does not alter its implications. It is particularly true if the escalated levels of alert in an acute crisis the American president (or his part) could be expected to delegate the control of nuclear weapons down the chain of command. A major precaution against a possible enemy attack on the strategic system by instantly killing the commander in chief, the chairman of the Joint Chiefs and those in the presidential succession with a very small number of nuclear weapons. In contrast to the normal peace time status of the strategic system to disbelieve and checkmate an incoming attack has become more credible. Because the status of nuclear weapons would be dispersed, more attention is given to make separate and independent

judgments that this time the message is real. The problem would be most sensitive with submarines placed on a higher alert status. These boats have no physical constraint on launching nuclear weapons outside the boats' crews themselves and experience difficulty with outside communication while making maximum effort to avoid detection. Finally, each side's alert preparations would almost certainly be quickly detected by the other side. (Quick detection by the Soviets is precisely why the United States went to a higher level of strategic alert in 1973 to signal its resolve.) The temptation to respond to the other side's alert with a still higher state of one's own would feed not only the physical changes in the two systems but the psychological state of the respective, enlarged group of policy-makers, each with a finger on the nuclear trigger.⁷

At higher alert levels in a crisis a greater danger arises that action will occur—either unauthorized or actions with unanticipated effects—that will be misconstrued by the other side as moving beyond preparation to a commitment to attack. In the Cuban missile crisis, multiple such actions occurred. With mutual high alerts, the number and reduced tolerance of such events could be extremely troubling.

Finally, simultaneous high levels of alert may complicate the task of orchestrating de-escalations back down to lower alert conditions when such action by one side would appear to give the other very decided advantages.⁸

Command and Control of Nuclear Weapons

The command and control of nuclear weapons or C³I (command, control, communications and intelligence) have become subjects of increased attention in recent years for both policy-makers and analysts (e.g., Blair, 1985). With respect to crisis stability, two command and control issues seem paramount:

- Elements of command and control remain one of the most vulnerable elements of the strategic system susceptible to a first strike;
- Highly centralized control of nuclear weapons by the highest national authority poses an exceptionally vulnerable target.

Command and Control Vulnerability. The general vulnerability of C³I results from numerous factors ranging from the "softness" of many elements of the system (e.g., satellite receiver stations, radars, telephone exchanges) to the uncertain effects of nuclear detonations on the performance of electronic equipment and certain radio frequencies (e.g., the ability of the electromagnetic pulse, or EMP, from a high altitude nuclear explosion to create harmful voltage surges over a wide area);

from the increased operational requirements that result from adopting more complicated strategic plans to the increased complexity arising from the tighter integration of more components.

As with so many of the consequences for crisis stability, the main effects appear to flow from the policy-makers' awareness of this vulnerability and their efforts to cope with it. Because each side knows that key elements of the other side's command and control system can readily be disrupted by a modest force and that such an attack might offer a chance of prohibiting a substantial, effective counterattack, there is a temptation to consider a preemptive strike. This is particularly so knowing that one's own side might be made similarly inoperative by an equivalent assault. If war seems likely (which is what a crisis is about), the command and control system may become a factor, not for controlling the situation and promoting a resolution of the crisis, but a pressure for a preemptive nuclear attack.

National Authority Vulnerability. A second dimension of the problem is the vulnerability of the national command authority. Control of nuclear weapons by the highest national authorities has been a widely accepted principle since the beginning of the nuclear age. With the proliferation of strategic systems in geographically diverse locations, the problem of maintaining control has become more complex. In characterizing the evolution of the American system, Bracken (1983) uses the analogy of a rifle trigger and safety catch in which the trigger is inoperative so long as the safety catch is on. "The primary command centers were to serve as triggers, but their ability to fire would be refrained by the viable functioning, and the survival, of the presidential command center. If the safety catch of the system were destroyed, direct operational control would devolve to the primary command centers . . ." (Bracken, 1983: 196-197). Obviously, many steps have been taken to insure the accessibility of the President or his successor to the primary command centers—the constant proximity of the military aide with the authorizing codes, the standby maintenance of the National Emergency Airborne Command Post, and so on.

As with other parts of the command and control system, the centralized control—both the "safety catch" and the primary "triggers"—represent a fairly small number of targets. The Soviet Yankee class submarines off the Atlantic coast of the United States, the American Pershing II missiles in Europe, and nearby American Poseidon and Trident submarines all have missiles with flight times of under 12 minutes capable of destroying the high command centers. The time from the moment of detection of their launch to impact on their targets could in many circumstances be insufficient to remove the designated authorities to safety. In fact, the key subordinate commands also could be subject to

similar prompt attacks creating the possibility of its top political and military leadership being struck.

Once again the adverse effect of the steps taken to cope with the vulnerability to attack and the resulting perception of the American system designed to maintain "national authority" whereby through a presidential "safety catch" the ability to authorize an attack is retained by the national military command before an attack is launched. If these authorities are lost, then by pre-arrangement the weapons under their command can be launched. If the authority may disappear suddenly, the delegated command to crisis status nuclear weapons has been pre-arranged to be launched continuously and confidently as long as the national authorities are still safe and retained. The question is how is authority firmly recovered after a crisis for crisis stability by eroding de-

Strategic Plans

Not only the weapons, the means of their use on which readiness is suddenly dependent. Strategic plans for their use can affect crisis stability. Perceived changes in these other elements of strategic war plans. The two current trends for crisis stability appear to stem from the increase in weapons and the increasingly vulnerable command and control system. The two problems are a preemptive decapitation strike

Launch Under Attack. Launching a preemptive response to the perceived growth of the mobile site ICBMs, whose protection they are overwhelmed by sufficient numbers to be possessed by the other superpower. The assurance that retaliation can be guaranteed by the command and control system, and, thus, repelling an attack and effective counterstrike. In addition, after a nuclear exchange an opponent's ability to protect moveable strategic systems located at known bases. These are the best chance of destroying by a

requirements that result from adopting to the increased complexity arising from core components.

Consequences for crisis stability, the main concern of policy-makers' awareness of this vulnerability with it. Because each side knows the other's command and control system can be disabled by force and that such an attack might be a substantial, effective counterattack, there is a preemptive strike. This is particularly so if the attack might be made similarly inoperative by a surprise attack (which is what a crisis is). The vulnerability of the system may become a factor, not for promoting a resolution of the crisis, but for a preemptive strike.

A second dimension of the problem is the loss of command authority. Control of nuclear command authorities has been a widely accepted principle of the nuclear age. With the proliferation of nuclear weapons at geographically diverse locations, the problem of command becomes more complex. In characterizing the problem, Bracken (1983) uses the analogy of a system in which the trigger is inoperative so that the primary command centers were to be destroyed, direct operational command centers . . . "(Bracken, 1983) "steps have been taken to insure the continuity of the primary command center and the military aide with the authorizing authority of the National Emergency Airborne

command and control system, the centralized command and the primary "triggers"—represent the Soviet Yankee class submarines in the United States, the American Pershing II and the American Poseidon and Trident submarines. The time from the moment of impact on their targets could in many cases be removed by the designated authorities to the commands also could be subject to

similar prompt attacks creating the specter of a society abruptly deprived of its top political and military leadership as the result of a decapitation strike.

Once again the adverse effect on crisis stability partially results from the steps taken to cope with the command and control susceptibility to attack and the resulting perceptions. Bracken (1983) describes the American system designed to meet this problem as one of "cascading authority" whereby through a practice of pre-delegated authority, the ability to authorize an attack is passed to consecutively lower levels of military command before an attack. Assuming higher levels of authority are lost, then by pre-arrangement these officers decide on the use of the weapons under their command. It is the knowledge that the higher authority may disappear suddenly that poses the direct danger of pre-delegated command to crisis stability. Once authority over the use of nuclear weapons has been pre-delegated in a crisis, how does one continuously and confidently assure designated commanders that higher authorities are still safe and retaining authority? After the crisis is over, how is authority firmly recovered? These are the kind of problems posed for crisis stability by eroding decision control.

Strategic Plans

Not only the weapons, the means for their control, and the occasions on which readiness is suddenly accelerated, but also the pre-arranged plans for their use can affect crisis stability. Indeed actual changes or perceived changes in these other factors often motivate changes in strategic war plans. The two current proposals with powerful implications for crisis stability appear to stem from analyses of changing characteristics in weapons and the increasingly recognized problems of command and control vulnerability. The two proposed plans are launch under attack and a preemptive decapitation strategy.

Launch Under Attack. Launch under attack represents a possible response to the perceived growing vulnerability of land-based, fixed-site ICBMs, whose protection through hardening appears to some to be overwhelmed by sufficient numbers of accurate, MIRVed warheads possessed by the other superpower. Such a strategy also offers greater assurance that retaliation can be implemented with an intact command and control system, and, thus, represents a better chance for a coordinated and effective counterstrike. In addition, it recognizes that at the beginning of a nuclear exchange an opponent would act to disperse and otherwise protect moveable strategic systems such as bombers and submarines located at known bases. These are time-urgent targets that one has the best chance of destroying by attacking very quickly before they are

moved. (An aggressor might be reluctant to move all these assets prior to his initial attack because it could reveal his intention.)

In a crisis, the possibility of strategic or advanced warning of an impending attack is uncertain and quite likely to be ambiguous. It is only after information processing centers have interpreted signals from intelligence sensors of a ballistic missile attack under way that a tactical warning can be flashed to command centers. If one's own ICBM sites appear to be the probable targets of such an attack, the policy-makers face the much discussed problem of losing a substantial portion of their hard-target, quick response strategic force in less than 30 minutes. Ordering a launch of the targeted systems before they are destroyed by incoming warheads is the proposed plan for launch under attack.

If a launch under attack plan were to have any reasonable hope of success, it would require putting strategic forces on a high state of alert once an international crisis occurs. To minimize delay, launch procedures must be linked very closely to warning sensors. As Bracken (1983: 55) has noted, "tightly coupled systems are notorious for producing over-compensation effects." Information in any part of the system gets repeated and amplified and the costs of any verifications or checks that take more than a moment may insure the defeat of the time-urgent plan. The tendency in any launch under attack plan would be to "switch off" certain normal negative controls under high conditions of alert that might fatally delay its implementation.

Information processing under such conditions would likely appear very different than in the same strategic command and control system under normal conditions or even in a crisis without a commitment to a launch under attack plan. Crisis stability would be sharply degraded as any real or false signals surged through the system. Not only the authorities in the country using such a plan, but also their counterparts on the other side, would be severely affected if they suspected that in a crisis their adversaries were committed to a launch under attack plan.

Preemptive Decapitation. Under the prevailing conditions of mutual deterrence, policy-makers in the Soviet Union and the United States both now and in the future are expected to conclude that no objectives or goals are remotely worth the horrors of nuclear war. But in a crisis would these same calculations prevail under the conditions in which, for example, one side believed the other had adopted a launch under attack policy? Or suppose the policy-makers fully recognized and accepted the implications of the other circumstances described in this chapter. Might they still believe that nuclear war was not worth any of their goals, but conclude that such a war now seemed extremely likely or, perhaps, inevitable? On such an occasion might leaders be tempted to implement a preemptive first strike against the most vulnerable element

of the other side's strategic force in the belief that it offered a path to its own survival? It would be impossible to strike that would be targeted, not themselves, but the political and communication nodes, and the intelligence that constitute the brain of the highly industrialized world. As Blair (1985: 189) has noted, "Half the 4000 C³I targets could be struck by a single nuclear patrol." Steinbruner (1981-82) suggests that the political and military nuclear strategy has several advantages. First, it is a credible retaliatory response because the threat of retaliation (Should retaliation be unprovoked?) is certain. "Second, it offers some small chance that if a nuclear strike occurs and no retaliation will follow."

The consequences for crisis stability are staggering. It imposes powerful incentives for a nuclear strike if, in a crisis, war is inevitable. It also greatly increases the likelihood of miscalculated escalation as suggested by the following:

Proposals for Enhancing Crisis Stability

If policy-makers' conscious decisions (and the effects) in both the United States and the Soviet Union produced the recent developments in a future crisis, then it should be possible to undo these adverse effects. It is clear that if the described actions were taken deliberately, greater instability resulted in that it would require military leaders to realize other objectives. The primary purpose is to create the most stable conditions. Many criteria must be pursued.

- The deterrent must be credible.
- The deterrent must be acquired through a process of financial, social, and political development.
- The deterrent must provide a clear and certain threat (e.g., for the United States and the Soviet Union, of Europe and certain other countries, of a nuclear attack).

reluctant to move all these assets prior to reveal his intention.)

strategic or advanced warning of an attack is quite likely to be ambiguous. It is possible that command centers have interpreted signals from a missile attack under way that a tactical nuclear attack is under way. If one's own ICBM sites are destroyed, the policy-makers are faced with the prospect of losing a substantial portion of their strategic force in less than 30 minutes. Ordering a launch before they are destroyed by incoming missiles is a high-stakes decision.

It is difficult to have any reasonable hope of maintaining strategic forces on a high state of alert. To minimize delay, launch procedures require a high state of alert. Warning sensors, as Bracken (1983: 55) notes, are notorious for producing over-reactions. If any part of the system gets repeated verifications or checks that take more time than the time-urgent plan. The backup plan would be to "switch off" the system under high conditions of alert that are likely to occur.

Such conditions would likely appear in a crisis without a commitment to stability would be sharply degraded through the system. Not only the backup plan, but also their counterparts are affected if they suspected that in a crisis they might be committed to a launch under attack plan. The prevailing conditions of mutual deterrence between the Soviet Union and the United States are based on the assumption that no objectives are at stake in nuclear war. But in a crisis, the conditions in which, if one had adopted a launch under attack plan, policy-makers fully recognized and accepted the consequences of nuclear war. In the circumstances described in this chapter, nuclear war was not worth any of their lives. At the present time, nuclear war now seemed extremely likely or, on occasion, might leaders be tempted to launch against the most vulnerable element

of the other side's strategic forces—the command and control system—in the belief that it offered a possible chance, however slim, of their own survival? It would be imperative to attack first with a preemptive strike that would be targeted, not primarily against the strategic forces themselves, but the political and military command centers, the strategic communication nodes, and the information processing centers that constitute the brain of the highly integrated force. Such targets appear to be well identified by both sides and their numbers are small. According to Blair (1985: 189): "Half the 400 primary and secondary U.S. strategic C³I targets could be struck by Soviet missile submarines on routine patrol." Steinbruner (1981-82) suggests that a decapitation strike against the political and military nuclear command and control system offers several advantages. First, it is likely to reduce the damage of any retaliatory response because the response would lack controlled coordination (Should retaliation be undertaken? When? Against what targets?). "Second, it offers some small chance that complete decapitation will occur and no retaliation will follow" (Steinbruner 1981-82: 19).

The consequences for crisis stability of a decapitation strategy are staggering. It imposes powerful incentives on both sides for a preemptive nuclear strike if, in a crisis, war is perceived to be nearly inescapable. It also greatly increases the likelihood of war by loss of control or miscalculated escalation as suggested by Lebow (1987b).

Proposals for Enhancing Crisis Stability

If policy-makers' conscious decisions (sometimes without appreciation of the effects) in both the United States and the Soviet Union have produced the recent developments that increasingly jeopardize stability in a future crisis, then it should follow that they can make decisions to undo these adverse effects. It is most unlikely, however, that any of the described actions were taken deliberately to reduce crisis stability. Rather, greater instability resulted inadvertently from efforts by political and military leaders to realize other objectives. Even if one's sole military purpose is to create the most effective strategic deterrence possible, many criteria must be pursued. Among them are the following:

- The deterrent must be credible to potential adversaries.
- The deterrent must be acquired and maintained at acceptable levels of financial, social, and political burden.
- The deterrent must provide protection to all highly valued assets (e.g., for the United States extended deterrence requires protection of Europe and certain other allies against both conventional and nuclear attack).

- The deterrent, if entailing nuclear weapons, must not make conventional war more likely (i.e., neither side must become so convinced that nuclear war has been prohibited by deterrence that they feel free to initiate conventional war without fearing risk of escalation).
- The deterrent must minimize the possibility of accidental or inadvertent war.

This list by no means exhausts the requirements. Moreover, each of the criteria mentioned can be further elaborated to reveal additional specifications. Such criteria and their elaboration create demands that are contradictory. Some are achieved at the direct expense of others. For example, it is commonly thought that a degree of uncertainty about the conditions that trigger release of a deterrent force contributes to extended deterrence (coverage of all valued assets) and prevents an adversary from believing a conventional war can be waged without the danger of nuclear escalation. Though uncertainty may benefit those requirements, it increases the risk of miscalculation and accidental war. Similarly if strategic deterrence doctrine includes a launch under attack policy, then an adversary may be deterred from considering a preemptive strike, but again the risks of loss of control and accidental war are increased. In brief, the pursuit of these deterrence criteria often entail major tradeoffs. Efforts to fulfill one mean that others may be left unsatisfied. Thus, many steps that could be taken to improve crisis stability will have adverse effects on other deterrent criteria.

Appreciation of this agonizing dilemma has led some thoughtful people to challenge the appropriateness of strategic deterrence as presently conceived as a satisfactory means of war prevention. If all the criteria are necessary to make deterrence work and some are mutually exclusive, then strategic deterrence as a means of war prevention is seriously defective. Although the list of necessary deterrence requirements offered by these individuals might appear different from those indicated above, it is the same essential dilemma that has prompted advocates on both the political left and right to press for alternatives to nuclear deterrence and the present condition it has generated of mutual assured destruction. The results have ranged from advocacy of the strategic defense initiative to the American Catholic and Methodist bishops' respective critiques and calls for disarmament. Thus, one response to the problems of crisis stability is to avoid war by some means other than nuclear deterrence. As important as the search for alternatives is, it is not the focus of this chapter. The remaining task of this essay is to consider means of dealing with crisis stability within the context of a policy of nuclear deterrence.

We will review a variety of arrangements under three categories that can be performed unilaterally and even if not reciprocated by the elements that require either the tacit consent of both primary parties. Some arrangements require an active role for third parties.

Many things that might be done to improve crisis stability need to be planned and implemented. These steps, nevertheless, are done in response to a crisis as it develops. They constitute crisis management—which is being considered as crisis avoidance and reduction in the likelihood of a politico-military crisis happening. How do we protect against a 1973 Arab-Israeli War with improved crisis stability tackles the problem of potentially risky episodes. We believe that acting alone can perform.

Unilateral Actions

Reduce Vulnerability of Strategic Systems
Two lines of reasoning. First, vulnerability counterforce preemption. Second, strategic system as vulnerable, then must assume that it is intended for or for retaliation in a hair-trigger condition could convert a confrontation into a full-scale war.

At the present time the fixed target systems of the Soviet Union are becoming more vulnerable to reliance on such systems by short-range missile borne missiles is often recommended (Hermann, 1985: 231). The problem of vulnerability if the vulnerable ICBMs are not vulnerable to forces become available. In the past, the development of such systems has been difficult to achieve. Furthermore, alternative systems have obvious cost requirements, the price of which has been widely recognized. Nevertheless, there is an approach to deterrence problems that is generally favorably inclined.

Upgrade Strategic Command and Control
command and control of strategic systems.

ear weapons, must not make con-
either side must become so convinced
hibited by deterrence that they feel
without fearing risk of escalation).
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crisis stability within the context of

We will review a variety of proposals for improving crisis stability arranged under three categories. Some approaches entail actions that can be performed unilaterally and presumably could improve conditions even if not reciprocated by the other side. Others are bilateral arrangements that require either the tacit cooperation or explicit agreement of both primary parties. Some arrangements are multilateral and involve an active role for third parties.

Many things that might be useful to try and control a crisis once it occurs need to be planned and initiated long before any crisis happens. These steps, nevertheless, are designed to affect the nature and path of a crisis as it develops. They could be examined under the heading of crisis management—which is beyond our current focus. What will be considered as crisis avoidance are possible steps intended to reduce the likelihood of a politico-military crisis between the superpowers ever happening. How do we protect against another Cuban missile crisis or a 1973 Arab-Israeli War with its rapid escalation? This approach to crisis stability tackles the problem by focusing on the prevention of such potentially risky episodes. We begin by examining actions that one party acting alone can perform.

Unilateral Actions

Reduce Vulnerability of Strategic Forces. This prescription follows from two lines of reasoning. First, vulnerable strategic forces might encourage counterforce preemption. Second, if both sides recognize a particular strategic system as vulnerable, then the party toward which it is directed must assume that it is intended for use either as part of a first strike or for retaliation in a hair-trigger launch under attack mode. Either condition could convert a confrontation into a major crisis.

At the present time the fixed-base ICBMs of the United States and the Soviet Union are becoming more vulnerable. Reducing each side's reliance on such systems by shifting to mobile ICBMs or submarine borne missiles is often recommended as a response (e.g., Allison et. al., 1985: 231). The problem of vulnerability will not be addressed, however, if the vulnerable ICBMs are not withdrawn once the alternative strategic forces become available. In the past, unilateral dismantling of older systems has been difficult to achieve, particularly for the Soviet Union. Furthermore, alternative systems have liabilities. In addition to the obvious cost requirements, the problem of verification of mobile systems has been widely recognized. Nevertheless, building new weapon systems is an approach to deterrence problems to which both sides are accustomed and generally favorably inclined.

Upgrade Strategic Command and Control. The growing recognition that command and control of strategic forces may be the most vulnerable

component of the deterrent force compels advocacy of steps to reduce its exposure for the same reasons as those for silo-based ICBMs. A great danger lies in attempted cures that heighten the crisis instability problem. As we have noted earlier, the pre-crisis delegation of authority to use nuclear weapons or the tendency to connect even more directly strategic warning and nuclear response systems can greatly compound efforts at crisis management.

Steps to build in more redundancy and to harden components of C³I represent better responses from a crisis stability perspective. Among others, Blair (1985) has warned that there are real limits to the degree that command and control systems can be made less vulnerable. It may also be the case that command and control upgrades may appear less attractive to strategic force managers, always faced with budget constraints, than acquiring and maintaining new weapons systems. The pressure always exists for lower costs, quick fixes in the form of changes in doctrine and strategy—the very approaches that further erode crisis stability.

Making Political Leaders Better Informed About Crisis. Lebow (1987b) makes a strong case that most recent presidents and their top advisers have devoted minimal efforts to learning about plans for operating in an extreme politico-military crisis—e.g., learning about evaluation plans, nuclear options, control procedures, etc. Drills involving the president have been exceedingly rare. Similarly, there has been little systematic review of past crises—particularly the points at which major difficulties in perception, information management, implementation, and communication arose. The neglected consideration of plans or past crises may breed a false sense of security that someone else has made all the necessary arrangements and if the contingency arises the president and his advisors can slip quickly and effectively into the pre-established crisis management mode.

Some briefings and rehearsal might improve the quality of the decision-making process and choices made should a crisis arise. (Change in crisis management planning could be developed in response to the president's requirements and political judgments that might result from rehearsals.) But this recommendation is introduced in the crisis avoidance category because the heightened knowledge by the highest political officials of the frailty of crisis management might add incentives for leaders to avoid crises. Few political leaders would admit to a preference for brinkmanship or management by crisis, but the reluctance of policymakers to become acquainted with the details regarding the probable conditions and decisions that might be required of them can lead to unwarranted confidence in the ability to handle readily such problems when they arise. Of course, the biggest obstacle to such rehearsals and

planning is that they demand time. Such activities appear to have the same cost as the time they save. Moreover, because they are so unthinkable, it is likely an unpleasant surprise to avoid.

Introduction of Unilateral Confidence-Building Measures. At the time of Osgood's (1962) proposal (in tension), suggestions have been made for unilateral confidence-building measures—and for reducing the tensions—and for reducing the tensions. Such steps are designed with the intention not to act in provocative ways, but to make one's actions more predictable to the adversary or making the absence of actions more predictable. Confidence-building measures can be implemented from rhetorical gestures (e.g., nuclear non-intervention in certain regions, a moratorium on certain weapons, or a unilateral ban by opponent or neutral parties).

Betts (1985: 68) captures one of the most certain ways to prevent a crisis, but this approach can be counterproductive. The advantage of relaxed inhibitions is that an opponent will take advantage of the situation. Another is that the opponent will be initiated solely for propaganda purposes. As designed to create false confidence, the opponent will be responded to with increased tensions. The difficulties can be reduced if the measures are examined in the next section.

Bilateral Actions

Arms control agreements might be a good starting point for bilateral crisis avoidance initiatives. When the primary objective is crisis stability, including crisis stability, viewing arms control primarily as a means to control weapons, attention is directed to the possibility of war. As Nye (1984a: 404) observed, "The more concerned with the prospect of war, the more concerned with the prospect of numbers." Of course, prohibitions of certain kinds may be one of

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Informed About Crisis. Lebow (1987b) ent presidents and their top advisers learning about plans for operating in e.g., learning about evaluation plans, s, etc. Drills involving the president arly, there has been little systematic the points at which major difficulties ment, implementation, and commu- deration of plans or past crises may hat someone else has made all the contingency arises the president and effectively into the pre-established

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planning is that they demand time of the president and his top associates. Such activities appear to have the quality of being deferrable to a later date. Moreover, because they require leaders to think about the unthinkable, it is likely an unpleasant experience that most would wish to avoid.

Introduction of Unilateral Confidence-building Measures. At least since the time of Osgood's (1962) proposals for GRIT (graduated reduction in tension), suggestions have been introduced for reducing East-West tensions—and for reducing the risk of crisis—by confidence-building measures. Such steps are designed to assure one's adversary of one's intention not to act in provocative or war-like ways. Often this entails making one's actions more predictable and visible (observable) to one's adversary or making the absence of actions predictable and observable. Confidence-building measures can take many different forms ranging from rhetorical gestures (e.g., nuclear no first use declarations, pledges of non-intervention in certain regions) to physical demonstrations (e.g., a moratorium on certain weapons tests, opening installations to inspection by opponent or neutral parties)⁹.

Betts (1985: 68) captures one of the basic difficulties of unilateral confidence-building measures, when he observes: "In pre-crisis times the most certain way to prevent tension is to give in to the opponent, but this approach can be counter productive if the other side takes advantage of relaxed inhibitions to expand its influence." This danger—that an opponent will take advantage of a gesture—is one of three. Another is that the opponent will regard the step as meaningless or initiated solely for propaganda purposes. Such actions can also be viewed as designed to create false confidence and invalid assurance that should be responded to with increased vigilance and suspicion. Some of these difficulties can be reduced if the steps are mutual, which is an approach examined in the next section.

Bilateral Actions

Arms control agreements might be viewed as the primary vehicle for bilateral crisis avoidance initiatives. It is important to note, however, that when the primary objective of arms control is to increase deterrence stability, including crisis stability, then the emphasis shifts. Instead of viewing arms control primarily as a means of reducing or eliminating weapons, attention is directed to preventing the conditions that lead to war. As Nye (1984a: 404) observes: ". . . risk-reduction measures are more concerned with the prospects of use of such weapons regardless of numbers." Of course, prohibition of certain weapons or force reductions of certain kinds may be one means to achieving stability, but other

means exist as well. Moreover, as has often been noted, reductions to very low levels of some major weapons, without highly confident means of verifying compliance, could actually reduce stability. When the agreed-upon level of a weapon is at or near zero, one side may conclude that the clandestine construction of a very small number that are suddenly revealed in a crisis could provide an enormous advantage. Thus, from the perspective of stability the emphasis in arms agreements must be to constrain the use of weapons under severe circumstances. Numerous stabilizing arms control proposals have been advanced, but a review of several will illustrate major approaches.

Prohibit Strategic Weapons Deployments Near Borders. In the so-called "keep-out zones" or "stand-off zones" approach, the parties agree not to deploy strategic weapons close to the border of their adversary. The purpose of such an agreement is to reduce the vulnerability of national capitals and major command and control centers to sudden knock-out strikes by weapons that offer virtually no time (i.e., less than 10 minutes flight time) for evacuation or other protective measures. Enhancing the survivability of political and military authorities means that a decapitation option would appear less likely to succeed and, therefore, that threat to deterrence would be reduced. Such a strategy also enhances the survivability of the bomber leg of deterrence forces by allowing those on alert time to clear the runway. Lebow (1987b) has suggested a keep-out zone of 2500 kilometers from a nation's capital, although a longer distance might be desirable. Such an agreement, at a minimum, would have to include land and sea-based ballistic missiles, but might also include a ban on the forward deployment of cruise missiles. (See Blair, 1985: 301) Close-in patrolling of nuclear submarines is particularly troubling. It is noteworthy that following the initial deployments of American Pershing II missiles (ballistic missiles with short flight time characteristics) in West Germany, the Soviet Union moved several of its nuclear-armed strategic submarines stationed in the Atlantic closer to the Eastern seaboard of the United States.¹⁰

As in many arms control agreements, verification of compliance poses a significant obstacle. Fixed-site, land-based missiles such as the Pershing II or the Soviet SS-20 (which threatens European capitals, but not Washington) pose the least problem for verification. Cruise-missiles, which are small and easily moved, are extremely difficult to detect and, thus, to verify. Submarines also pose a problem. Both sides might be reluctant to reveal the circumstances under which a reasonable degree of verification could be achieved with their submarines because such information would reveal valuable data about the status of anti-submarine warfare capabilities. A further problem is that even intercontinental ballistic missiles based over 5,000 miles away afford less than 30 minutes

warning and that may not always be available to political leaders. Nevertheless, in a crisis of this kind, the warning and preparation already has been completed and might create enough uncertainty to challenge command authority that the tempo of the crisis would be more easily resisted. This is especially true if by the routine dispatch of a top leader or a senior vice president at the beginning of the crisis (see Lebow, 1987: 231)

Restrict Tests of ASAT Weapons and Depressed Trajectories. An alternative approach to the testing of certain technologies judged to be destabilizing is the testing of such weapons (Depressed Trajectories) quite different problems for crisis stability. Depressed trajectories (SLBMs) that do not follow a ballistic path and satellite weapons both illustrate the problems with on testing. In each case the technology is advanced to the point where either side has the capability to be ready for deployment. A prohibition on testing would exclude the emergence of the technology.

The elimination of ASAT tests would be a problem for both sides use extensively for nuclear deterrence with existing treaties and for crisis stability. The ability to destroy such satellites is a significant problem for crisis stability. Depressed trajectories a comparable difficulty to that of ballistic missiles—command centers—they severely reduce the ability to command and control the forces. The path of these weapons reduces the ability to command and control the forces.

Agreeing to outlaw a promise of a new technology has always been a problem for crisis stability, particularly acute when one side has a significant advantage. In the case of a promise to limit the ability to develop a space-based weapon, the Strategic Defense Initiative. Thus, the spillover effects on other weapons are a significant problem, however, is that verification can be achieved with a degree of confidence, although some reduction in the use of high energy lasers or other weapons (permitted tests) can arise. An ASAT test would reveal some existing capability in the force (see Lebow, 1987: 298-300).

has often been noted, reductions to weapons, without highly confident means, usually reduce stability. When the agreed-upon level is near zero, one side may conclude that a very small number that are suddenly destroyed confer an enormous advantage. Thus, from an emphasis in arms agreements must be made under severe circumstances. Numerous proposals have been advanced, but a review of approaches.

Deployments Near Borders. In the so-called "keep-out zones" approach, the parties agree not to deploy weapons to the border of their adversary. The goal is to reduce the vulnerability of national command and control centers to sudden knock-out attacks with little or no time (i.e., less than 10 minutes) for protective measures. Enhancing the security of these centers means that a decapitation strategy would be more difficult to succeed and, therefore, that threat would be reduced. Such a strategy also enhances the effectiveness of deterrence forces by allowing those forces to be closer to the adversary. Lebow (1987b) has suggested a keep-out zone around a nation's capital, although a longer range zone, at a minimum, would be required for depressed ballistic missiles, but might also apply to the deployment of cruise missiles. (See Blair, 1985) The presence of nuclear submarines is particularly problematic following the initial deployments of ballistic missiles with short flight time. The Soviet Union moved several of its submarines stationed in the Atlantic closer to the United States.¹⁰

Verification of compliance poses a problem for land-based missiles such as the Pershing which threaten European capitals, but not the United States. Cruise-missiles, which are extremely difficult to detect and track, pose a problem. Both sides might be able to reach an agreement under which a reasonable degree of confidence could be reached with their submarines because such data about the status of anti-submarine warfare. A problem is that even intercontinental ballistic missiles miles away afford less than 30 minutes

warning and that may not always be enough to insure evacuation of leaders. Nevertheless, in a crisis where some degree of strategic alertness and preparation already has been initiated, a keep-out zone agreement might create enough uncertainty about the survival of the adversary's command authority that the temptation to adopt a decapitation strategy would be more easily resisted. This strategy could be further enhanced by the routine dispatch of a top leader from the capital (e.g., the American vice president at the beginning of any crisis). (See Allison et. al., 1985: 231)

Restrict Tests of ASAT Weapons and Submarine Ballistic Missiles in Depressed Trajectories. An alternative to the prohibition on the deployment of certain weapons in a given area is to prevent the maturation of certain technologies judged to threaten stability by agreeing to restrict the testing of such weapons (Drell and Ralston, 1985). Although posing quite different problems for crisis stability, submarine launched ballistic missiles (SLBMs) that do not follow a high-arching trajectory and anti-satellite weapons both illustrate curbs that could be imposed by bans on testing. In each case the technology currently has not been developed to the point where either side has a reliable and threatening system ready for deployment. A prohibition on further testing would likely exclude the emergence of the threat these systems could create.

The elimination of ASAT tests would protect existing satellites, which both sides use extensively for monitoring the other side's compliance with existing treaties and for C³I. As noted earlier in this essay, the ability to destroy such satellites as a result of ASAT could pose grave problems for crisis stability. Depressed trajectory weapons would create a comparable difficulty to that of deploying weapons close to national command centers—they severely minimize warning time and threaten the ability to command and control a retaliatory strike. The flatter flight path of these weapons reduces the possibility of radar detection.

Agreeing to outlaw a promising technology by banning its testing has always been a problem for major military powers. The problem is particularly acute when one side or the other sees that it might achieve an advantage. In the case of a prohibition on ASAT, it would sharply limit the ability to develop a space-based defense such as the American Strategic Defense Initiative. Thus, there is the added problem of the spillover effects on other weapons programs. The advantage of test bans, however, is that verification can usually be devised with a high degree of confidence, although some related problems such as monitoring the use of high energy lasers or encryption (coding of information from permitted tests) can arise. An ASAT test ban would also leave in place some existing capability in the form of antiballistic missiles (Blair, 1985: 298-300).

Strengthen the ABM Treaty. A third arms control approach for enhancing stability is a total prohibition on certain classes of weapons. The 1972 Anti-Ballistic Missile (ABM) Treaty is a case in point. It uses prohibitions of weapons tests, but goes beyond that to ban operation of radars in certain modes and regulates their location as the major controversy over the Soviet radar at Krasnoyarsk illustrates. (The radar's location appears to be a clear violation of the ABM Treaty.)

Suppose one concludes that the technologies likely to be available well into the 21st century would not allow the United States, or any other country, to deploy a ballistic missile defense having a high probability of destroying almost all missiles in a large-scale attack. Going ahead with such a system would then likely be seen as part of a first-strike strategy. Having only limited defensive capability and itself open to disruption from attack, the ballistic missile defense system could seriously increase the pressure on the adversary to launch a preemptive strike in a crisis. Scenarios like this one reveal the danger for crisis stability.

To prevent such developments, it can be argued that a comprehensive ban on ABMs should be continued and the treaty instrument strengthened. Clearer definitions to prohibit exotic technologies and to sharpen the meaning of what constitutes laboratory testing would be required. Modes of testing radars must be further detailed and what is meant by the periphery of each country also needs tightening.

Such an upgrading of the ABM Treaty encounters opposition on several grounds. If one accepts the assumption that a ballistic missile defense can be designed to be highly effective against a large-scale first strike (or against a strike limited in size by agreements to reduce the size and kind of offensive systems), then its threat to stability may not be so severe. Opponents also argue that Soviet violations have occurred that make further emphasis on this kind of treaty prohibition unwise.

Establish Nuclear Risk Reduction Crisis Center. In 1982 Senators Sam Nunn, John Warner, and the late Henry Jackson amended the Defense Authorization Act to direct the Defense Department to evaluate several ideas for reducing the risk of nuclear crises. One of their proposals was for a joint nuclear risk reduction center. (See Interim Report of the Nunn-Warner Working Group, 1985.) The basic concept entails creation of a bilateral forum for diplomatic and military personnel of the superpowers at which potential or actual confrontation problems and procedures for dealing with them would be discussed. Groups and individuals have explored variations of this proposal (e.g., Betts, 1985b; Blechman, 1983; Landi et al., 1984; Ury and Smoke, 1984; Ury, 1985). Advocates have viewed the proposal both as a means of crisis prevention and as

a tool for crisis management, although the latter is emphasized here.

The center or centers (there may be more than one, linked by telecommunications) would be located between the Soviet Union and the United States. The center would work on confidence-building activities, clarify positions and avoid unintended provocations. "In principle its work could involve a wide range of particular issues in force postures, but it would focus on problematic scenarios and possible solutions."

The approach to crisis stability is not without its own problems. Improve crisis stability and avoid escalation is a proposal that calls for continued dialogue. Opponents about the issues on which the center would operate. The greatest raises numerous questions. One is that a center might become a means for deception. Another is that the center would be staffed by the kind of high level officials to whom the adversary would be meaningful exchange. If the center is staffed by low level military officers and diplomats, the center's official policy would be minimal and the center would attract attention within their own governments. The center might also be viewed with suspicion by other countries as evidence of an emergency power at the expense of the rest of the world. Such criticisms can be easily dismissed. The proposal appears to be a logical extension of the Strategic Arms Reduction Commission (SARC) created by the Strategic Arms Reduction Commission (SARC) created by the Strategic Arms Reduction Commission (SARC), designed to address issues of arms control. The SARC, treaties, has been generally regarded as a success. (See Ury, 1986.)

Agree on Code of Conduct for Crisis Management. A joint crisis center stresses the importance of the avoidance of crises, then the proposal would be to establish rules and norms emphasizes procedures for crisis management. American summit meetings in 1973 and 1975 were the first to have been the high water mark of crisis management. For crisis avoidance were adopted. In 1973, when Brezhnev signed the Basic Principles of Relations Between the United States and the Soviet Union in Washington they negotiated the Basic Principles of Relations Between the United States and the Soviet Union. These bilateral agreements established principles to which both sides pl

arms control approach for enhancing certain classes of weapons. The 1972 is a case in point. It uses prohibitions that to ban operation of radars in location as the major controversy over strates. (The radar's location appears Treaty.)

technologies likely to be available not allow the United States, or any ballistic missile defense having a high missiles in a large-scale attack. Going when likely be seen as part of a first defensive capability and itself open ballistic missile defense system could the adversary to launch a preemptive this one reveal the danger for crisis

can be argued that a comprehensive and the treaty instrument strengthened. tic technologies and to sharpen the tory testing would be required. Modes detailed and what is meant by the eds tightening.

M Treaty encounters opposition on the assumption that a ballistic missile ly effective against a large-scale first in size by agreements to reduce the), then its threat to stability may not that Soviet violations have occurred s kind of treaty prohibition unwise. Crisis Center. In 1982 Senators Sam Henry Jackson amended the Defense nse Department to evaluate several ar crises. One of their proposals was center. (See Interim Report of the 5.) The basic concept entails creation and military personnel of the super-al confrontation problems and pro-be discussed. Groups and individuals oposal (e.g., Betts, 1985b; Blechman, Smoke, 1984; Ury, 1985). Advocates a means of crisis prevention and as

a tool for crisis management, although the avoidance functions will be emphasized here.

The center or centers (there might be one in each superpower capital linked by telecommunications) would involve representatives of both the Soviet Union and the United States. Their purpose would be to work on confidence-building activities in normal times and to clarify positions and avoid unintended provocations in times of increased tension. "In principle its work could involve exchanges of data, discussions of particular issues in force posture and doctrine, and consideration of problematic scenarios and possible joint actions" (Betts, 1985b: 68).

The approach to crisis stability taken in this proposal is bold—to improve crisis stability and avoid superpower crises. Not surprisingly, a proposal that calls for continuous dialogue between the major antagonists about the issues on which their competitive interests may be greatest raises numerous questions. One of the criticisms is that such a center might become a means for planting disinformation and engaging in deception. Another is that each side might be reluctant to commit the kind of high level officials to participation in the center necessary for meaningful exchange. If the center discussion occurred among lower level military officers and diplomats, their flexibility for innovation from official policy would be minimal and the likelihood of their ideas receiving attention within their own governments would be very limited. The center might also be viewed with alarms by allies and Third World countries as evidence of an emerging condominium between the superpowers at the expense of the rest of the world. Although none of these criticisms can be easily dismissed, it should be noted that the center proposal appears to be a logical extension of the Standing Consultative Commission (SCC) created by the 1972 ABM and SALT I Treaties. The SCC, designed to address issues associated with compliance with the treaties, has been generally regarded as a very useful bilateral, professional forum that has worked well. (See Caldwell, 1985; Buchheim and Caldwell, 1986.)

Agree on Code of Conduct for Crisis Prevention. If the concept of a joint crisis center stresses the creation of a structure to assist in the avoidance of crises, then the proposal for a code of conduct or set of rules and norms emphasizes processes for avoiding crises. At the Soviet-American summit meetings in 1972 and 1973, which subsequently appear to have been the high water mark of detente in that era, formal rules for crisis avoidance were adopted. In Moscow in May, 1972, Nixon and Brezhnev signed the Basic Principles Agreement and the following year in Washington they negotiated the Agreement on Prevention of Nuclear War. These bilateral agreements constitute an effort to establish general principles to which both sides pledge to adhere in order to prevent their

competition from triggering major crises. These particular documents contain only broad generalities and were accompanied by no mechanisms to encourage compliance or for consideration of how they might be applied in particular situations. George (1983, 1984a), who has led the exploration of this approach in the United States, judges such broad principles of agreement to be extremely unlikely to be effective. Instead he proposes three different kinds of declarations for crisis prevention—norms, rules of engagement, and *ad hoc* ground rules (George, 1983).

Norms are tacit understandings that emerge from experience or lessons drawn from experience. These are practices that both sides may follow without formal agreement. Rules of engagement are explicitly negotiated between the two sides and establish specific actions that would and would not be permitted in a given area or under given conditions. Finally, *ad hoc* rules for escalation control can be devised when the two other arrangements are absent and the superpowers find themselves in a particular situation with clear potential for escalating conflict. These are limitations devised for controlling a specific encounter. All three approaches emphasize agreement on operational features linked closely to well-specified conditions.

The fundamental difficulty is that the mix of common interests and competing interests between the superpowers seems to be perceived on both sides as favoring competition in most circumstances. The desire to gain or maintain a unilateral advantage over an adversary is incredibly powerful. To reach and abide by an agreement that constrains those opportunities in exchange for the possibility of avoiding a crisis that has not yet occurred (and may not happen soon) requires actions that meet strong political and military resistance. Nye (1984a) notes that specific qualities of the superpowers—the secretive nature of the Soviet society and the relatively frequent shifts and inconsistencies in American policy—compound the problem of perceiving and sustaining reciprocity of compliance with crisis avoidance procedures. Thus, each side tends to believe that what it must forego in way of unilateral advantage is not equal to what the other may yield if it complies at all.

Multilateral Actions

We will not emphasize multilateral arrangements for crisis avoidance, but wish to acknowledge the desirability of further exploration of this approach. It is noteworthy that U.S.-Soviet crises frequently have involved third parties including their allies and Third World countries who often become the subject of the crises. In fact, without their competition in these areas, the Soviet-American rivalry would have created many fewer occasions for crisis. Clearly the need to coordinate with allies or take

into account the parties in any crises, recommends consideration. In more, the conflict management has a major role to third parties as brokers. Variations of the Nunn-Warner plan envisioned it as having multilateral verification and associates (1984) have proposed that the United States establish a series of mechanisms that could be combined into various potential crisis situation warrants.

One intriguing multilateral idea is an international monitoring agency to verify the weapons of the Soviet Union and the United States (1985a), the multilateral monitoring of the verification of the status of each side's start satellites and other technologies. A check on each side's own early warning system that system failures could lead to a crisis might also make either side's efforts more difficult to conduct without knowledge. Knowledge of such additional mechanisms as a further deterrent. The computerized system necessary to perform the job would be expensive and would be shared by the antagonists themselves. The United States is reluctant to openly share state secrets. Yet they might feel pressured to do so in advanced technological societies and their capability.

Con

For approximately the last one hundred years, the United States and the Soviet Union have had different views with respect to their strategic nuclear capabilities. As noted, these changes have in-

- Deployment of certain weapons with characteristics;
- Command and control configurations that could lead to instability;

crises. These particular documents were accompanied by no mechanisms for consideration of how they might be implemented (George, 1983, 1984a), who has led the thinking in the United States, judges such broad generalizations to be extremely unlikely to be effective. Instead, the use of declarations for crisis prevention—*ad hoc* ground rules (George, 1983)—that emerge from experience or lessons learned from past practices that both sides may follow. Such arrangements and engagement are explicitly negotiated to achieve specific actions that would and would not be taken in a given area or under given conditions. Such control can be devised when the two sides, or the superpowers find themselves in a situation with the potential for escalating conflict. These arrangements are usually following a specific encounter. All three have certain operational features linked closely

to the mix of common interests and the interests of the superpowers seems to be perceived on a case-by-case basis in most circumstances. The desire for a strategic advantage over an adversary is incredibly strong. The possibility of an agreement that constrains those actions that would avoid a crisis that might happen soon) requires actions that are met with resistance. Nye (1984a) notes that the Soviet side—the secretive nature of the Soviet side and inconsistencies in American policy—perceiving and sustaining reciprocity in such procedures. Thus, each side tends to act in a way of unilateral advantage is not likely to be achieved if it complies at all.

Such arrangements for crisis avoidance, and the possibility of further exploration of this issue. Soviet crises frequently have involved the United States and Third World countries who often, in fact, without their competition in the region, would have created many fewer crises. It is difficult to coordinate with allies or take

into account the parties in any region in which a superpower crisis arises, recommends consideration of multilateral approaches. Furthermore, the conflict management literature traditionally has assigned a major role to third parties as brokers, mediators, and arbitrators. Some variations of the Nunn-Warner proposal for a crisis avoidance center envisioned it as having multilateral participation. (See Ury, 1985.) Landi and associates (1984) have proposed that the Soviet Union and the United States establish a series of bilateral direct communication links that could be combined into various multilateral networks as a particular potential crisis situation warranted.

One intriguing multilateral idea proposes the establishment of an international monitoring agency to provide surveillance of the strategic weapons of the Soviet Union and the United States. Proposed by Lebow (1985a), the multilateral monitoring agency would provide independent verification of the status of each side's strategic forces using state of the art satellites and other technology. The purpose would be to provide a check on each side's own early warning system to reduce the likelihood that system failures could lead to launching an attack by mistake. It might also make either side's efforts to prepare for a preemptive attack more difficult to conduct without detection and worldwide reporting. Knowledge of such additional monitoring and verification would serve as a further deterrent. The computers, satellites, and associated technology necessary to perform the job with sufficient reliability to be credible would be expensive and would likely require the active assistance of the antagonists themselves. The superpowers could be expected to be reluctant to openly share state of the art technology for surveillance. Yet they might feel pressured to participate by other nations or other advanced technological societies might be able to supply the necessary capability.

Conclusions

For approximately the last one and a half decades both the United States and the Soviet Union have initiated a variety of actions with respect to their strategic nuclear forces that have reduced crisis stability. As noted, these changes have included:

- Deployment of certain weapons systems with destabilizing characteristics;
- Command and control configurations whose vulnerability produces instability;

- Established practices of force generation in response to strategic alerts (admittedly dormant during recent times), that if used in the future could be destabilizing;
- Changes in doctrine and strategy—both proposed and adopted—that could be destabilizing in a crisis.

Not all changes have decreased crisis stability. Although there have been some actions that have contributed to improved crisis stability, the judgment must be that on balance the net effect of all changes in the configuration of strategic forces has been to reduce crisis stability. This conclusion does not mean that any major crisis in the future between the United States and the Soviet Union must inevitably result in a breakdown of deterrence and the initiation of war. The point is that both sides have made it more difficult to end an acute crisis without war. In sum, the nuclear war risk is greater.

The changes that have increased the risk of war in crisis do not appear to result from callousness or indifference to crisis stability. Rather the effects seem to be the inadvertent consequences of pursuing other objectives to strengthen deterrence and conserve resources.

Dangers to crisis stability have sparked numerous prescriptions for corrective action. Table 6.1 summarizes the options reviewed in this essay. An examination of this sample of proposals for enhancing crisis stability leads to several observations.

1. The approaches are diverse. Some assume a direct approach and seek to alter the immediate source of the problem. Thus, for example, the proposed ban on ASAT tests or the initiative to improve C³I deal with the specific developments that have generated stability problems. Other proposals tackle the problem indirectly by advancing offsetting measures to deal with possible effects. The proposal for submarine stand-off zones illustrates an indirect approach to dealing with strategic plans of decapitation or preemption in general. Still other proposals seek to eliminate the problem by minimizing the occurrence of situations that could alter normal stability. In other words, if we could avoid acute superpower crises entirely, we would not have to worry about their effects on deterrence stability.

2. The emphasis seems to be on crisis avoidance. Whether the proposals take a direct or indirect approach, there appear to be a greater range of recommendations for initiatives in the category of crisis avoidance than for crisis management. No systematic review of the literature has been undertaken to confirm this conclusion, but certainly the range of approaches would appear to be greater in principal for averting such situations as opposed to getting out once they have occurred. It would be a mistake, however, to infer that exploration of the topic of crisis

TABLE 6.1 SUMMARY OF PROPOSALS FOR ENHANCING CRISIS STABILITY

Proposal	Purpose	Possible Liabilities
MULTILATERAL ACTIONS		
1. Create an International Strategic Missile Monitoring Agency	a. Guard against breakdown of either side's independent strategic warning system that might lead to accidental war and to further discourage any attempts by either side to engage in covert war preparations.	Technology might require participation of U.S. and USSR who could be expected to resist sharing such technology; costs of reliable system would be high.
BILATERAL ACTIONS		
1. Prohibit Strategic Weapon Deployments Near Borders	a. Prevent decapitation strike against political and military leaders	Verification difficulties with some weapons (e.g., cruise missile).

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BILATERAL ACTIONS		
1. Prohibit Strategic Weapon Deployments Near Borders	a. Prevent decapitation strike against political and military leaders b. Enhance survivability of second-strike forces (e.g., enable bombers to be flushed)	Verification difficulties with some weapons (e.g., cruise missile). Could expose state of ASW capabilities. Limits to how much time for evaluation can be achieved even with keep-out zones.
2. Restrict Tests of Submarine Ballistic Missiles in Depressed Trajectories and ASAT Tests	a. Prevent decapitation strike b. Maintain survivability of C ³ I and related satellites	Constrains other programs such as SDI. Banning technology at test stage has been difficult.
3. Strengthen the ABM Treaty	a. Discourage preemption by prevention of the development of a ballistic missile defense which would be perceived as being used in conjunction with a first strike	SDI not provocative if it can be made to work against large scale attack. Soviet violations of ABM Treaty challenges utility of that approach.
4. Establish Nuclear Risk Reduction Crisis Center	a. Avoid crises by continuous discussion and information exchange between Soviet and American diplomats and military officers	Could foster deception; staffing by officials with sufficient seniority to be flexible would be difficult; might generate alarm among allies and Third World.

(TABLE 6.1)

Proposal	Purpose	Possible Liabilities
BILATERAL ACTIONS (cont.)		
5. Agree on Code of Conduct for Crisis Prevention	a. Avoid crises by negotiating agreement to adhere to certain codes of conduct to limit superpower competition	Requires each to forego unilateral advantage which may not appear to be reciprocated equally, secret nature of Soviet society and inconsistency of U.S. policy heighten in each other's suspicion.
UNILATERAL ACTIONS		
1. Reduce Vulnerability of Strategic Forces	a. Reduce perception of weapons' mission as being for first strike	Older systems are not always destroyed, so purpose is defeated. New weapons accelerate arms race and overall costs; mobile ICBMs are difficult to verify.
2. Upgrade Strategic Command and Control	a. Curb adversary's incentive for a decapitation strike in particular and preemption in general b. Reduce the necessity for immediate use of retaliatory strategic forces (increase decision time)	Given the nature of C ³ I, there are significant limits to which some components can be protected at reasonable costs. Military may resist heavy expenditures that come at the expense of maintaining existing weapons or acquiring new ones.
3. Have Political Leaders Better Informed About Crises	a. Increase incentive to avoid crisis by more realistic understanding of difficulties in maintaining control b. Improve crisis management	Training time of president and top advisors difficult to schedule; subject is unattractive and appears less pressing than other business.
4. Introduce Unilateral Confidence-Building Measures	a. Provide adversary with assurances that one does not intend to act in provocative way — particularly to minimize unintended provocations or uncertainties	Opponent may take advantage of assurances, or may regard them as meaningless or deliberately designed to be misleading.

management to enhance crisis stability. Certainly, the crisis management for their use, e.g., upgrading the crisis.

3. All the proposals involve enumerate every objection that enhancing crisis stability. It has that each approach poses difficult criteria, such as uncertainty. Other political costs.

Where does this leave us? This for the future examination of crisis

1. What priority should be given to other requirements for effective us to weigh the evidence as to stability as well as to articulate nuclear war.

2. What are the criteria by stability should be appraised? We exercise in which major proposals perspective rather than in isolation

3. Have the risks associated so great that, like major war instruments for the pursuit of national would admit to pursuing a national. Nevertheless, they have not addressed concerning the unacceptability of to the use of nuclear forces. If acute how can that conclusion be reached in both the United States and the

1. An earlier version of this paper of the International Political Science Crisis in the Nuclear Era."

2. Other classifications have been and Nye (1985: 10) suggest the for unauthorized use, surprise attack, pre war, and catalytic war. Although important such distinctions, the last three categories of what has been referred to here

Given the nature of C³I, there are significant limits to which some components can be protected at reasonable costs. Military may resist heavy expenditures that come at the expense of maintaining existing weapons or acquiring new ones.

Training time of president and top advisors difficult to schedule; subject is unattractive and appears less pressing than other business.

Opponent may take advantage of assurances, or may regard them as meaningless or deliberately designed to be misleading.

a. Curb adversary's incentive for a decapitation strike in particular and preemption in general

b. Reduce the necessity for immediate use of retaliatory strategic forces (increase decision time)

a. Increase incentive to avoid crisis by more realistic understanding of difficulties in maintaining control

b. Improve crisis management

a. Provide adversary with assurances that one does not intend to act in provocative way — particularly to minimize unintended provocations or uncertainties

2. Upgrade Strategic Command and Control

3. Have Political Leaders Better Informed About Crises

4. Introduce Unilateral Confidence-Building Measures

management to enhance crisis stability should not be vigorously explored. Certainly, the crisis management proposals make clear that preparations for their use, e.g., upgrading the hot line, must be in place before the crisis.

3. All the proposals involve tradeoffs. No effort has been made to enumerate every objection that could be raised to each proposal for enhancing crisis stability. It has been possible, however, to illustrate that each approach poses difficulties. Some directly affect other deterrence criteria, such as uncertainty. Others have substantial financial and/or political costs.

Where does this leave us? Three major questions appear to be central for the future examination of crisis stability.

1. What priority should be given to improving crisis stability relative to other requirements for effective deterrence? This question requires us to weigh the evidence as to how serious we regard the threat to stability as well as to articulate the other requirements for avoiding nuclear war.

2. What are the criteria by which proposals for enhancing crisis stability should be appraised? We need to engage in a serious assessment exercise in which major proposals are evaluated in a comparative perspective rather than in isolation.

3. Have the risks associated with major superpower crises become so great that, like major war itself, they are no longer acceptable instruments for the pursuit of national policy? It is unlikely that leaders would admit to pursuing a national policy through crisis confrontations. Nevertheless, they have not adopted the same kind of shared norms concerning the unacceptability of acute crises that now appear to apply to the use of nuclear forces. If acute crises are now too risky to contemplate, how can that conclusion be reached in a timely fashion by the leadership in both the United States and the Soviet Union?

Notes

1. An earlier version of this paper was presented at the XIIIth World Congress of the International Political Science Association under the title: "The Ultimate Crisis in the Nuclear Era."

2. Other classifications have been proposed. For example, Allison, Carnesale, and Nye (1985: 10) suggest the following general paths to war: accidental or unauthorized use, surprise attack, preemption in crisis, escalation of conventional war, and catalytic war. Although important insights can be gained by considering such distinctions, the last three categories can be regarded as further differentiation of what has been referred to here as war resulting from crises.

3. For evidence in the movement toward consensus on a definition of crisis, at least from a decision-making perspective, compare Hermann (1972), Young (1977), and Brecher (1978). The definition of crisis used here is a variation on Brecher's modification of my own earlier efforts. I accept his introduction of the expectation of military hostilities as particularly appropriate for delimiting the class of problems to be examined in this essay.

4. For further discussion of crisis stability, see Mearsheimer (1986: 7), Snyder (1961: 104-110), and Schelling (1966: 221-259).

5. This section is a condensed version of a chapter entitled, "Trends Toward Crisis Instability: Increasing Danger of Nuclear War," prepared by the author for a forthcoming book edited by Stephen Cimbala, *Challenges to Deterrence in the 1990s* to be published by Praeger.

6. This analysis applies to space-based or space-supported ballistic missile defenses designed to attack the boost phase of enemy missile launchers. Ground-based, point-defense might enhance crisis stability with respect to increasingly vulnerable silo-based ICBMs. Without such defense ICBMs may be recognized by both sides as increasingly valuable only if they are launched before they are attacked. If they can be restored as second-strike, retaliatory weapons by ballistic missile defense, it would reduce the possible "use them or lose them" pressure on policy-makers in a crisis.

7. In his book, Lebow (1987) envisions three broad ways in which a superpower crisis could result in war—preemption, miscalculated escalation, and loss of control. In his view increased strategic alerts above normal levels represent a primary means by which the sides could lose control.

8. Several readers of an earlier version of this paper correctly noted that there has been no trend toward increased use of strategic alerts, but on the contrary they have occurred less frequently—none since 1973 despite incidents such as the invasion of Afghanistan or the Soviet shooting down of the Korean airliner. Perhaps there is increased sensitivity in the policy community to the implications of strategic alerts. The assumption of this essay remains, however, that a higher level of strategic alert in the late 1980s would be far more serious than in 1973 because of the changing nature of the force systems of the two sides and the greater likelihood that the expanded Soviet capability would mean that they would respond with a higher alert level of their own.

9. A considerable literature exists on confidence building measures (CBMs). (For an introduction see Holst, 1983). Most of the analysis to date, however, has focused on theater operations (particularly between NATO and WTO) rather than on strategic forces. An exception is Vick and Thomson (1985) who discuss the use of CBMs in each of the three legs of the triad (ICBMs, bombers, submarines) to reduce the crisis of strategic nuclear war. Many CBMs assume mutual adoption by both sides rather than unilateral steps. In his initial work, Osgood (1962) assumed that each step would be unilateral but there would be expectations of a responsive step by the other side—sooner or later. The unilateral first step would remain in place until there was a response. When a responsive step occurred, then the initiator would take an additional step. Thus, he envisioned sequential unilateral measures.

10. Both the Soviet Union and the United States have ballistic missiles on patrol off the coast of the Soviet Union. The Soviet Union has not kept its three missile squadrons on patrol in the mid-Atlantic at the coast of the United States since February 1984 (after the beginning of the Soviet missile ban in Europe). Instead they have been on patrol 1,000 to 2,000 miles off the U.S. east coast. The U.S. does not know of their exact location by the U.S. (Hermann, 1986: 6.)

toward consensus on a definition of crisis, perspective, compare Hermann (1972), Young's definition of crisis used here is a variation on earlier efforts. I accept his introduction of CBMs as particularly appropriate for delimiting crisis in this essay.

stability, see Mearsheimer (1986: 7), Snyder (1986: 221-259).

version of a chapter entitled, "Trends Toward the End of Nuclear War," prepared by the author and Stephen Cimbala, *Challenges to Deterrence in the Nuclear Age*.

air-based or space-supported ballistic missile as the next phase of enemy missile launchers. Ground-based crisis stability with respect to increasingly advanced but such defense ICBMs may be recognized as viable only if they are launched before they can be used as second-strike, retaliatory weapons by the adversary to reduce the possible "use them or lose them" dilemma.

discusses three broad ways in which a superpower could lose control: miscalculated escalation, and loss of strategic alerts above normal levels represent a loss of control.

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10. Both the Soviet Union and the United States keep submarines carrying ballistic missiles on patrol off the coasts of the other country. Apparently the Soviet Union has not kept its three ballistic missile submarines that normally patrol in the mid-Atlantic at the closer range demonstrated in January and February 1984 (after the beginning of American deployment of Pershing II missiles in Europe). Instead they have moved back to the "box area" roughly 1,000 to 2,000 miles off the U.S. eastern coast. This may be to reduce detection of their exact location by the U.S. Navy. (See the *New York Times*, October 6, 1986: 6.)