PLANNING FOR NATO'S NUCLEAR DETERRENT IN THE 1980s AND 1990s

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PLANNING FOR NATO'S NUCLEAR DETERRENT IN THE 1980s AND 1990s[1]

James A. Thomson

NATO's defense planners face critical issues about the future of NATO's nuclear deterrent, but the intense political controversy over the impending deployment of new Long-Range Theater Nuclear Forces (LRTNF) in Europe has submerged these issues, and the political environment is not conducive to addressing them. Nevertheless, NATO political and military authorities will have to make decisions about these issues in the coming decade. A decision not to decide will still be a decision, one that could lead to a steady withering of the deterrent value of NATO's nuclear forces.

NATO planners need to look anew at: (1) the structure of short- and medium-range theater nuclear forces, (2) the contribution that U.S. sea-based and intercontinental nuclear assets make to NATO's deterrent, (3) NATO's capabilities to direct its forces in war, and (4) the size of the nuclear stockpile in Europe. Notwithstanding their potential for political controversy, a comprehensive examination of these issues should not be delayed very much longer.

The issues have arisen for a variety of reasons:

- o NATO's flexible response strategy poses certain requirements that have not received adequate attention in the past;

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[1] This paper is an expanded version of a presentation made at the IISS Conference, "Nuclear Forces in Europe: Doctrine, Forces, and Arms Control," held in May 1982.

- o Since NATO's strategy was adopted, several changes have occurred in the military balance, in our understanding of Soviet military doctrine, and in our concepts of how best to deter Soviet military actions that bear on NATO nuclear deterrent needs;
- o The existing NATO force structure is increasingly antiquated and faces a number of operational problems, not the least of which is survivability.

THE FLEXIBLE RESPONSE DEBATE

The backdrop to this examination is the current public debate over NATO's strategy of flexible response. Even before the nuclear weapons debate blossomed in Europe in 1981, it had become fashionable to criticize NATO strategy and to argue that NATO's decision to deploy new Long-Range Theater Nuclear Forces lacked a convincing military rationale. But now criticisms of NATO strategy have mounted, and a major debate is underway in the professional literature.[2] The criticisms are eclectic, touching on the vagueness of the doctrine, the incredibility or danger of the threat of first use of nuclear weapons, and the lack of attention to the conventional force requirements of deterrence, to name a few. This is not the place to deal with all aspects of the debate,[3] but the defenders of flexible response are hampered by the inherent

[2] See, for example, McGeorge Bundy, George F. Kennan, Robert McNamara, and Gerard Smith, "Nuclear Weapons and the Atlantic Alliance," Foreign Affairs, Spring 1982; Laurence Freedman, "Nato Myths," Foreign Policy, Winter, 1981/82; Laurence Freedman, "Limited War, Unlimited Protest," Orbis, Spring 1982; Jonathan Dean, "Beyond First Use," Foreign Policy, Fall 1982; Francois DeRose, "Inflexible Response," Foreign Affairs, Fall 1982.

[3] See J.M. Legge, Theater Nuclear Weapons and the NATO Strategy of Flexible Response, The Rand Corporation, R-2964-FF (forthcoming), for a comprehensive treatment of this debate.

vagueness of the strategy; and this vagueness in turn seems to imply that NATO's nuclear forces have no clear military purpose. The flexible response strategy does not answer many questions that are important for force planning--e.g., how long should a conventional defense be conducted before nuclear weapons are used, what targets should be struck with nuclear weapons, when should they be struck, with what kinds of weapons, etc.? In short, it offers no war plan for political or military leaders to follow in a crisis and no standard that can be used to calculate the precise nuclear deterrent needs of the Alliance.

Although the strategy is indeed vague, planning for NATO's nuclear deterrent forces does not necessarily have to proceed bereft of direction. A framework for planning can be constructed on the basis of the flexible response strategy, especially if NATO planners take careful account of developments that have occurred since its adoption in 1967.

THE PLANNING FRAMEWORK: CONTINUED NATO ADHERENCE TO FLEXIBLE RESPONSE

Although the flexible response strategy is now subjected to heavy criticism, this paper assumes that it will continue as the basis for Alliance deterrence planning once the current storm blows over. The strategy makes good sense for an alliance in which an ocean separates the principal nuclear power from the prospective theater of military action and for a situation in which the potential aggressor's nuclear forces can inflict catastrophic damage upon all members of the coalition. The flexible response strategy of NATO seeks to deter

aggression by the maintenance of capabilities that would allow it to respond to aggression at whatever level the enemy chose to fight. If this "direct defense" proved unsuccessful, NATO would deliberately escalate the conflict in an attempt to convince the enemy that further escalation was likely unless he ceased his military action and withdrew from NATO territory. If this process failed to achieve NATO's goal, the end point would be a general nuclear response of massive nuclear strikes against the full range of military targets.

Central to this deterrent strategy is the concept of escalation, which serves multiple purposes. It links the U.S. intercontinental nuclear forces to the defense of Europe through a series of escalatory steps, demonstrating to the Soviets the potential engagement of intercontinental forces and reassuring Europeans that the United States does not plan for an extended war limited to Europe. At the same time, it holds out the possibility that war might be terminated before escalating into an all-out global nuclear war, reassuring Americans that its leaders do not plan to invite Soviet nuclear attack on the United States at the outset of conflict in Europe. In short, flexible response lets the two sides of the Atlantic live with each other, despite an anomalous strategic situation.

In this context, there is no use bemoaning the imprecision of NATO strategy. Even if the Alliance desired greater precision (and there are substantial deterrence arguments for keeping the enemy guessing), the Alliance would not be able to have it and still have an Alliance. Except for the war plans for the two ends of the escalation spectrum--initial conventional defense on the West German border and general nuclear response--attempts at precision about planned military actions

(including the size, timing, and locale of nuclear employment) would be sure to face intractable political problems. There is really no choice: Alliance leaders are going to decide on the details of nuclear employment only when and only if it comes to that. The planning framework for NATO's nuclear deterrent must account for this fact.

THE PLANNING FRAMEWORK: ACCOUNTING FOR CHANGES

However necessary the flexible response strategy may be, its critics are correct in saying that it alone does not provide much of a framework for the construction of defense plans or for force structure decisions. This was recognized in NATO when the strategy was adopted, and the Nuclear Planning Group (NPG) has since been struggling to develop it further. But the political obstacles have proved to be large; the sole major force structure decision to emerge from the NPG process was the Alliance's December 1979 decision to deploy LRTNF.

Although the NPG has struggled since 1967 with strategy development, three important changes have occurred that need to be taken into account in the construction of a planning framework for the future--the military balance has continued to shift; the West has learned a good deal about Soviet military thinking; and, partly as a result of the latter, Western ideas about how best to deter the Soviets have continued to evolve.

The Military Balance. An escalation strategy would work best if NATO had "escalation dominance." Then the Soviets would be obliged to recognize that a conflict could eventually escalate to where they would be at a profound disadvantage and thereby be deterred. And if they didn't believe that NATO would escalate and tried to exploit their

conventional superiority, NATO's first use of nuclear weapons would cause them to recalculate their belief and quit their aggression.

When NATO adopted flexible response in 1967, qualitative differences between the NATO and Soviet nuclear force structures worked to the advantage of NATO's escalation strategy: Soviet TNFs, in particular, were quite crude compared with NATO's. This meant that NATO, through its use of nuclear weapons, could shift the burden of escalation to the Soviets. For example, NATO could have used its battlefield nuclear artillery weapons in precise strikes against Soviet military units, with fairly low collateral damage to surrounding areas and population. The burden of escalation would have shifted to the Soviets, because the only battlefield weapon available to them in the late 1960s was the inaccurate, high-yield FROG rocket, which could have caused extensive collateral devastation. Faced with that situation, Soviet leaders might have thought twice before escalating further. Similar qualitative asymmetries could be seen throughout the TNF spectrum.

The SS-20 is but a part of a Soviet effort that has reshaped the Soviet TNF force dramatically. The appearance of nuclear artillery, a new family of nuclear-capable ground attack aircraft, and a new family of theater ballistic missiles--the SS-20, -21, -22 and -23--has brought new qualitative dimensions to the force: increased accuracy and reduced yield for more precise, lower collateral damage attacks, greater responsiveness of the weapons to command, greater survivability, and more nuclear strike options theoretically available to Soviet leaders.[4] Because NATO did not respond to these changes, the burden

[4] Robert Moore summarizes these developments in "Theater Nuclear Forces: Thinking the Unthinkable," International Defense Review, April 1981.

of escalation has shifted away from the Soviets toward NATO. To use the example just mentioned, a NATO limited battlefield nuclear strike could be met by a qualitatively similar Soviet riposte, thus forcing NATO rather than the Soviets to up the ante. At other points in the TNF spectrum, namely LRTNF, NATO has no options at all and would face the burden of intercontinental nuclear warfare.

To restore a favorable balance, NATO's response to this change in the military balance would have to take two complementary directions: First, TNF modernization programs are needed to offset the Soviet efforts and insure that the burden of escalation does not fall on NATO. The LRTNF modernization effort is a necessary but not entirely sufficient step in this direction. Second, a multiplicity of flexible nuclear employment options can put NATO leaders in a better position to shift the escalation burden to the Soviet leaders so long as Soviet planning remains rigid.

Soviet Military Strategy. Despite changes in Soviet TNF force structure that would permit a Soviet escalation strategy, research into Soviet military thinking indicates that the Soviets are not interested in Western notions of flexible response, escalation, and war termination. So far as we can tell, the Soviet military is disposed to use nuclear weapons massively to support their forces in the achievement of military objectives--a "warfighting" strategy. In the theater, therefore, Soviet nuclear strikes would be directed at nuclear and conventional forces, their command and control elements (including political leadership), lines of communication, and other military support capabilities. Further, although Soviet political leaders speak

glibly about "no first use," Soviet military strategy stresses the importance of preemption should it appear that NATO would gain a military advantage from going first. To the extent that restraint is a factor in Soviet nuclear employment strategy, it probably stems more from the traditional military principle of economy of force than from escalation concerns.[5]

This Soviet strategy poses problems for flexible response and notions of deliberate escalation and limited nuclear use by NATO. The Soviets may initiate nuclear use themselves and do so massively, thus largely canceling prospects for escalation control. Or, if Soviet strategy is taken at face value, NATO limited first use would be foolhardy because it would cede the strategic initiative to the Soviets and invite massive strikes on NATO forces. These problems have caused some of the critics of flexible response to give up on the doctrine and argue that the Alliance should emulate the Soviets. If we are going to go nuclear in a NATO-Warsaw Pact war, the argument goes, let's not fool around with limited strikes and escalation control, let's get the maximum military advantage from our nuclear employment.

There are at least two reasons why the Alliance should not precipitously abandon the escalation strategy because of what we have learned about Soviet military strategy. First, peacetime Soviet military writing and behavior may not be a guide to wartime operations. Soviet leaders make the ultimate decisions about nuclear employment. We don't know how they would behave in a conflict if actually faced with the nuclear abyss. They might prove substantially less sanguine about nuclear warfighting than their military's strategy implies.

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[5] There are numerous articles on these points. See, for example, Benjamin Lambeth, Selective Nuclear Options in American and Soviet Strategic Policy, The Rand Corporation, R-2034-AF, December 1976.

Second, the apparent rigidity in Soviet military strategy is not necessarily a bad thing from NATO's point of view. If NATO used nuclear weapons selectively, Soviet leaders could find themselves fumbling for intermediate response options that would hold some hope of future restraint on the conflict. Such fumbling could provide opportunities for negotiations and termination of the war.

Although Soviet military strategy does not dictate that we should discard flexible response, we can't ignore Soviet strategy, or else we will fail to deter the Soviet's war. For this purpose, NATO needs response options and capabilities for engaging the Soviets on a nuclear battlefield--to counter Soviet nuclear warfighting.

Western Deterrence Theory. Partially as a result of growing awareness of Soviet military thinking, Western thinking about what deters the Soviets has evolved over the past decade. This evolution is best exemplified by the changes in U.S. strategy for the employment of intercontinental forces. All of these changes were motivated by a U.S. desire to maintain the credibility of the role of its intercontinental forces in deterring both nuclear and conventional nuclear attack, including attacks on Europe.[6] The most important developments were the adaptation of the flexible response theory to intercontinental force employment (NSDM-242) and the adoption of the countervailing strategy (PD-59), which the current U.S. administration adheres to in substance if not in name. These changes moved the United States away from a theory of deterrence based on a capability to punish the USSR for

[6] The evolution of U.S. strategy and capability is chronicled in Anthony H. Cordesman, Deterrence in the 1980s: Part I, American Strategic Forces and Extended Deterrence, Adelphi Paper No. 175.

striking the United States. Current deterrence theory embodies both the threat of punishment and the threat of denying the Soviets their military objectives in conflict; it requires that the United States have

> forces and plans for their use, such that the Soviet Union, applying its own standards and models, would recognize that no plausible outcome would represent victory on any possible definition of victory.[7]

In practice, these changes in U.S. intercontinental nuclear employment doctrine have meant a modest shift in U.S. targeting priorities away from attacks on Soviet urban-industrial targets toward attacks on Soviet military capabilities, including the forces and command-and-control that are oriented toward achieving Soviet objectives in a theater conflict. Therefore, these changes move to link U.S. intercontinental forces more closely to the defense of NATO. More than ever before, NATO nuclear employment doctrine needs to be harmonized with U.S. doctrine, and vice versa.

THE PLANNING FRAMEWORK: CRITERIA

No one could ever claim to know how NATO leaders would want to use nuclear weapons if they are ever put to the test. The possibilities are innumerable. NATO's nuclear weapons may be used first, or they may be used in response to Soviet nuclear use. They may be used in small numbers or large numbers. They may be used on East European or Soviet territory. They may be used largely with a military purpose in mind (to redress a crumbling military situation), with a largely political purpose in mind (to cause the enemy to decide to quit), or--as is more

[7] Walter Slocombe, "The Counter-Vailing Strategy," International Security, Vol. 5, No. 4, Spring 1981.

likely since military and political purposes cannot be disentangled in war--with both purposes in mind.

In view of these possibilities, NATO leaders need a large number of options. NATO's nuclear forces, which include U.S. intercontinental forces should:

- Be capable of executing a wide variety of limited nuclear attacks to deter limited Soviet attacks, both conventional and nuclear, and to provide options for escalation control and linkage;
- Be able to attack the full spectrum of Soviet military targets in both limited and massive attacks, especially including those Soviet forces that would be influential in the outcome of a theater campaign; and
- Hedge against the possibility that the outcome of military action might take time to develop, rather than occur after a single massive nuclear spasm.[8]

These requirements pose myriad problems for military planners and political leaders. Many of the targets that are important to the outcome of a theater campaign are mobile or movable. Political leaders may want to shape limited or massive strike options for maximum effect on the military situation at hand, something that cannot be predicted in

[8] This need, which is not a new one, has recently become a major political issue in the nuclear debate. Statements by U.S. defense officials have left the impression that the United States is planning to "win" a protracted nuclear war, which would apparently occur after the two sides had exchanged nuclear strikes on a massive scale. In fact, the need to hedge against conflict prolongation stems from two factors. First, the flexible response doctrine envisions the possibility of limited nuclear strikes carried out over time, rather than a single spasm massive attack. Second, although the Soviets would prefer to win any war quickly, they do not neglect the possibility of prolonged war.

advance. All this imposes heavy requirements on forces and their support, and on the political authorities responsible for nuclear employment. In particular, nuclear attack options preplanned in peacetime are unlikely to fit the wartime mold. The planning system should therefore be adaptable and not become a straight-jacket for political leaders.

The nuclear forces, their support structure, and the command-control apparatus for directing the forces in conflict need a variety of characteristics.

Credibility of Use. Employment options that are obviously incredible will not serve deterrence. But what exactly is "credible" to the Soviets? This question can never be settled absolutely; depending on one's assumptions, certain options will appear more credible than others. Nonetheless, this criterion is most important when we are speaking of possibilities for escalation control and linkage--in situations where NATO is attempting to induce some degree of mutual restraint. As was apparent from the Alliance's stress on the credibility issue in December 1979, the LRTNF decision was heavily motivated by concerns that NATO lacked an option to attack Soviet territory, other than the use of U.S. intercontinental forces--that a credibility gap had opened and had to be closed. This characteristic will obviously continue to bear on future force planning decisions.

Flexibility. Flexible weapons can be readily adapted to the changing requirements of political leaders. In fact, the term "flexibility" refers to a number of characteristics: the strike range of the weapons, yield/accuracy combination (for high target damage and low collateral damage), rapid retargeting, penetrativity, responsiveness

to command authority, and escalation potential, which includes such factors as ability to be employed in small numbers.

Enduring Survivability. Because we cannot know when political leaders may need to call upon the forces, the forces need to be able to survive through a potentially lengthy and intense conventional conflict, as well as limited and massive nuclear strikes. Endurance and survivability are a potentially bottomless pit for resources and could pose serious domestic political problems, because continuous mobility of nuclear forces is the best way to insure both. Some bounds are necessary for planning. For example, the entire force structure does not need to be survivable in case of a massive bolt-from-the-blue Soviet nuclear attack; only those forces that are expected to take part in a massive retaliation need be so survivable. This job can be left mainly to U.S. intercontinental forces, because the credibility-of-use characteristic is not so important in such a scenario. But it is important that the Soviets not be in a position to remove important NATO response options with a limited strike, thus putting the burden of escalation onto NATO. That is why it was necessary to provide mobility (although not continuous mobility) to the LRTNF force.

Force Synergism. Not all elements of NATO's nuclear force need to be able to do all things; a division of labor is possible. At one extreme, the theater forces could concentrate on limited employment missions, leaving the burden for massive attack with intercontinental forces. At the other extreme, the theater commander could assume command for all missions associated with his area of responsibility, including massive attacks with both intercontinental and theater assets. The current situation lies somewhere in between these extremes because

of NATO's desire to emphasize coupling between intercontinental forces and the theater. But as new issues are addressed in the future, some adjustments in this division of labor may be possible with resultant savings in force size and structure.

The above discussion and criteria help provide a basis for assessing the future nuclear deterrent needs of NATO. The remainder of this paper addresses these needs more specifically--the force structure, the force direction capability, and the nuclear weapons stockpile.[9]

THE FORCE STRUCTURE ISSUES

The following discussion is organized in terms of the range categories and of the basing of nuclear forces--in Europe (TNF), offshore, and in the United States.[10]

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[9] This paper deals explicitly with nuclear force needs. Such a focus is not meant to suggest that conventional force needs are secondary in importance. Indeed, a comprehensive assessment of the overall nuclear and conventional deterrent needs of NATO would reveal that NATO's most critical weakness is in conventional (and chemical) capabilities. This is so for two reasons. First--as the numerous critics of flexible response have argued--the credibility of any nuclear first use is declining, and the role of NATO's conventional forces in deterring Soviet conventional attack is growing as a consequence. Second, conventional forces are needed to deter Soviet nuclear attack by their ability to help deny the Soviets their theater military objectives in a nuclear war; nuclear forces alone cannot deny an enemy his territorial objectives because they cannot control territory. Steps to improve conventional defenses are fully consistent with flexible response. But the need to strengthen conventional forces should not be an excuse to ignore nuclear force needs.

[10] The discussion of theater nuclear force needs is organized around the division of TNF into short range (less than 100 km), medium range (100 to 1000 km), and long range (greater than 1000 km). This division is arbitrary but bears somewhat on the credibility-of-use question. The discussion does not deal with the defensive TNF systems, nuclear capable SAMs, and Atomic Demolition Munitions. It is unlikely that NATO will choose to modernize those nuclear systems because of the availability of conventional alternatives, among other reasons.

Short-Range TNF. This capability resides mainly in nuclear-capable artillery tubes and the nuclear warheads that support them. Because of their range, these systems are capable of strikes only on front line enemy maneuver, artillery and support units, and lines of communications close to the battlefield.

Over the past few years, substantial interest has grown in reducing or completely eliminating short-range TNF. Indeed, the so-called NATO "shift study" alluded to in the NATO communique of December 12, 1979, was at least partially motivated by such concerns.[11] Without question, short-range TNF will figure prominently in the future political debate.

There are substantial problems with NATO's nuclear artillery forces. Because of their limited range, they are restricted in the targets that they can strike, which seems to imply that nuclear weapons will be used against forces on NATO territory and raises concerns about the proximity of NATO forces to the intended targets. The need for deployment close to the battle area could force a use-them-or-lose-them situation. Their command subordination, embedded deep within the entire command hierarchy, raises questions about their responsiveness to political direction. The need for nuclear security and the primacy of the nuclear mission in military operational planning interferes heavily with the important conventional missions for artillery forces.

Most of these problems can be handled by modernization programs. The range of the artillery rounds can be extended substantially to

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[11] The communique called for a study of "the precise nature, scope, and basis of adjustments resulting from the LRTNF deployments and their possible implication for the balance of roles and systems in NATO's nuclear armory as a whole."

provide for increased target coverage and for deployment further behind the battle lines. Improved safety and security devices can mitigate security problems and reduce fears, already unfounded, about overrun and subsequent use by enemy troops and about unauthorized use by the proverbial mad colonel. Reduced yields, such tailored weapons effects as the notorious enhanced radiation (ER), and improved accuracy can reduce collateral damage to civilian population and infrastructure and danger to friendly troops. In fact, these features have all been included in the modernization programs for NATO's nuclear artillery forces for some time.[12] Should such programs proceed, it will probably be possible to reduce the overall size of the short-range warhead stockpile, which currently reflects an overconcentration on short-range systems in the NATO stockpile.

But the need for keeping some short-range systems remains. Perhaps the most important reason is credibility of use. Most observers would agree that in the event of impending conventional force collapse, NATO leaders, especially the U.S. President, would be more likely to authorize use of weapons launched from the battlefield against Soviet forces on the battlefield than weapons launched from the United States against the Soviet homeland. Although this example is extreme, it is meant to suggest that use of short-range weapons is a more credible option than use of weapons of longer range because of the clear and immediate military nature of the targets and the geographically localized nature of both the launch and the strike. Therefore, short-range systems give NATO leaders credible first-use options. They also provide options for NATO commanders to deal with Soviet military

[12] The Theater Nuclear Posture in Europe, Report to Congress by Secretary of Defense James R. Schlesinger, July 1, 1975.

operations in the event that the Soviets--true to their doctrine--have launched a combined nuclear and conventional offensive; therefore, they strengthen deterrence of Soviet nuclear attack.

At least three other advantages are worth mentioning. First, the existence of battlefield weapons makes the Soviets disperse their forces so that they do not present lucrative targets. Concentration for breakthrough efforts thus becomes a tricky and difficult maneuver. Second, the large number of artillery tubes in NATO forces capable of firing nuclear artillery rounds provides good enduring survivability for the short-range force. A final--and important--nonmilitary advantage is the political value of the short-range force because they can be deployed in support of a large number of allied forces, thus increasing the sharing of nuclear responsibilities, and can be deployed inexpensively because the artillery tubes are already there.

Although there are good reasons for keeping some short-range capability, prospects for doing so have been dimmed by the association of some of these weapons with enhanced radiation capability. Keeping ER weapons in the United States for crisis deployment to Europe is clearly a second best solution. The need for the President to take the additional (and politically difficult) step of deployment to Europe before the weapons can be used obviously reduces their deterrent value. And shipping of the weapons to Europe in a crisis could interfere with the deployment of conventional forces. Unless the current political obstacles to ER deployments can be overcome, non-ER replacements for the current obsolescent weapons will be needed. But because of the growing political opposition to short-range TNF, a decision to modernize with non-ER artillery will still encounter tough sleding.

Medium-Range TNF. These systems are expected to deal with a wider variety of targets than short-range systems: ground force units moving toward the battle, tactical air bases, lines of communications, support forces, nuclear forces such as the SS-21, -22, and -23, and command and control. Once the longer range Pershing II replaces the medium-range Pershing I with U.S. forces, almost all NATO's capability in this range category will reside in dual-capable tactical aircraft (DCA).

The future of the DCA force will be the principal issue on the planning agenda for mid-range forces. Should NATO continue its heavy reliance on them; should the nuclear mission for DCA be eliminated and taken over by a new force of surface-to-surface missiles (SSMs); or should a new SSM force be provided as a complement to the DCA force? This is by now an old issue. Past proposals to reduce or eliminate the nuclear mission for tac air and eliminate the Quick Reaction Alert (QRA) status were motivated by a number of factors. Most prominent was the minimal survivability of fixed air bases to nuclear attack. Another was the opportunity cost of diverting needed conventional tactical air assets to nuclear missions. A third was the inherent problem of penetrating air defenses in limited nuclear missions.

The Tomahawk ground-launched cruise missile (GLCM) was once seen as a potential replacement for DCA's nuclear mission, but this proposal has not been adopted: According to the NATO LRTNF decision, the GLCM is expected to assume missions against Soviet territory, although it is obviously capable at shorter ranges. Technology would permit NATO to acquire a missile system that could cover the same range of targets as today's DCA. For example, the single-stage version of the Pershing II missile, the Pershing Ib, could do the job.

But DCA have some important advantages over missiles that are procured solely for nuclear missions. They are a fairly inexpensive way of taking care of the medium-range nuclear missions, because those missions can be piggybacked onto aircraft procured primarily for conventional missions. That could be done with missiles too. For example, if NATO procures a missile for conventional missions under the so-called AXE concept,[13] the temptation to add a nuclear mission would be great. Another DCA advantage is that they provide allies with a fairly inexpensive way to share the burden of nuclear defense, because tactical aircraft are already a sunk cost for them. But this advantage could also decline if a new conventional missile force enters the NATO armory under the AXE or related concepts. Finally, from a military standpoint, aircraft could theoretically provide a unique capability to acquire and strike mobile or movable targets in the enemy's rear area in situations where NATO has decided or been forced into massive use (or where Soviet air defenses have broken down). Such targets are a large fraction of the medium-range target array. But even the unique advantages of DCA in these missions could be eroded if improved theater target acquisition capability becomes available in the next decade.

Ultimately, the DCA-missile issue will have to be decided on the basis of a complicated balancing of numerous considerations--planning scenarios, targets, cost-effectiveness, to name a few. The scenario for nuclear employment may be the driving issue. If--as is the case for short- and long-range systems--stress is placed on limited employment scenarios, missiles will have an advantage over aircraft, so long as

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[13] Aviation Week and Space Technology, June 7, 1982, pp. 64-67.

target acquisition systems mature to the point where movable targets can be struck. But if NATO continues to value an in-theater capability for massive use rather than relying more heavily on intercontinental assets, DCA will probably remain in the inventory.

Long-Range TNF. These systems are oriented toward targets generally found in Soviet territory: ground force units (though if the war has progressed for a time few may be left on Soviet territory), bases for medium bombers and tactical air, MR/IRBM forces, other nuclear assets, lines of communication, etc. With successful implementation of the December 1979 decision, NATO will be able to threaten limited strikes on such targets without reliance on sea-based or intercontinental assets. Both Pershing II and GLCM have good flexibility for carrying out such strikes (Pershing having a slight advantage because it can strike its targets promptly), although in both cases there is room for greater flexibility and more enduring survivability. In addition, NATO has U.S. F-111 fighter-bombers based in the UK that supply the needed range, but these systems have marginal benefits in limited-use scenarios because of the need to penetrate defenses. They also have important all-weather conventional bombing capabilities, and that must be their priority chore.

Barring the unlikely arms control solution that will eliminate the need for some LRTNF, and so long as the NATO 1979 decision continues to stand, this range category is unlikely to pose new force issues over the next decade.

Sea-Based and Intercontinental Assets. As already discussed, these forces are part of NATO's deterrent by the NATO doctrine of coupling, and their missions are being increasingly tied by U.S. policy to

influencing the military outcome of a NATO-Warsaw Pact war. Furthermore, they have always been allocated missions relevant to SACEUR's defense problem. Although they cannot substitute for the various TNFs in providing escalation options, they could theoretically have capabilities against almost all the target categories mentioned above, except, perhaps, for targets close to the front line.

Because of their inherent ability for prompt strikes against targets that are movable or whose value is fleeting, ICBMs are the systems most relevant to the theater if good target acquisition information is available. Heavy bombers can also play an important role in finding and destroying movable targets if air defenses have collapsed or have been surpressed. All three elements of the U.S. intercontinental Triad, as well as sea-launched cruise missiles (SLCMs), are more relevant to the theater in massive use than in limited use situations, when sea-based systems--SLBMs and SLCMs--may be marginally preferable to land-based systems from the standpoint of credibility of use. But ICBMs may be preferable because they can be launched in small numbers: They have a small number of RVs per missile, are capable of prompt strikes, are easy to retarget, can penetrate defenses, and can be launched without fear of revealing the location of a high-value asset, such as a submarine. As doctrine ties intercontinental forces more closely to the theater, such "extended deterrence" considerations ought to loom larger in U.S. decisions on intercontinental force modernization.

DIRECTING THE FORCE

Although the force structure issues are important, steps to modernize the nuclear forces will be rendered all but meaningless unless they are responsive to command authority. Here, the flexible response strategy poses requirements that have not been widely recognized in the past.

Since the invention of nuclear weapons, their destructiveness has dictated that their use be controlled by political leaders. NATO has endured many debates over how this control should be effected. From the standpoint of effective deterrence, these debates have fortunately turned away from such ideas as second-country vetos over nuclear use,[14] many-country votes, and so forth. The solution of the Athens' Guidelines has held since 1962: The ultimate decision for use resides with the nuclear power--the United States or the United Kingdom--which is committed to consult with its allies about nuclear employment, "time and circumstances permitting." [15] There is every reason to believe that this commitment is a solemn one, that the President of the United States or the Prime Minister of Britain will want to consult with allied leaders before making a nuclear decision, and that he or she will want to give special consideration to the views of allied leaders from whose nations nuclear strikes might be launched.

A popular notion of this decision is that there will be a single decision to "go nuclear" if the conventional defense is breaking down,

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[14] Of course, for "dual-key" systems operated by non-U.S. forces, both the United States and the participating ally have a veto.

[15] U.S. Security in Europe, Report to the Senate, Committee on Foreign Relations, October 2, 1973.

and, at that point, the weapons will be turned over to military commanders to do with as they will. But that is not what is implied by the doctrine described above. Rather, nuclear employment is to be undertaken with restraint and with possibilities for war termination in mind. Given the combined political and military purposes of nuclear employment, political leaders would want to take a strong hand in designing nuclear strikes. They would want military advice about how to construct an effective employment option but would reserve final judgment for themselves. And this goes not only for first nuclear use but for follow-on use as well.

Consequently, the problems of directing the nuclear force are highly stressful. To paint a vivid picture: There sits the President of the United States in continuous contact with military commanders, including SACEUR, and with allied leaders. He is receiving assessments of the military situation through his own military, intelligence, and diplomatic channels and through NATO channels. His allied counterparts are receiving information from their own national channels and from NATO. SACEUR is trying to run the most fast-paced and technologically complex war in history. In the middle of this, decisions on nuclear employment may have to be made by the President, in consultation with SACEUR and allied leaders. And nuclear weapons may be exploding on West European and U.S. territory.

The importance of force direction has been a centerpiece of the debate about nuclear strategy in the United States over the past few years. The Reagan administration's $18 billion (over five years in FY 82 dollars) program to improve the U.S. command, control, communications, and intelligence (C^3I) capabilities for intercontinental

forces has been widely publicized. Much less attention has been paid to the C^3I capabilities needed to direct the theater forces. This is in some ways ironic; the flexible response strategy implies that intercontinental forces are instruments of, at least, later resort than theater forces. But improvements in C^3I for the theater forces are made difficult by the multi-national structure of NATO and the immediate proximity of many theater C^3I assets to the potential battle area. At the same time, however, the C^3I capabilities to direct the theater nuclear forces are largely indistinct from those needed to direct the theater conventional forces.

A full description of theater C^3I needs is beyond the scope of this paper, but these needs may loom larger in discussions about NATO's nuclear deterrent over the next several years, so it may be useful to review the broad requirements. These fall into the areas of situation assessment, military command and control centers, political decisionmaking authority, and communication links.

Situation Assessment. This refers to all the capabilities that assist military commanders and political leaders in making decisions about the employment of forces, including nuclear forces, plus such traditional intelligence and target acquisition capabilities as reconnaissance, as well as specialized capabilities oriented toward nuclear use. The latter categories include capabilities to provide early warning of a nuclear attack, to rapidly characterize the nature of the attack before, during, and after its occurrence (its scope, timing, locations of intended targets and launch points, etc.), and to assess the effect of both enemy and NATO nuclear attacks on the military situation. Of course, a variety of initiatives are underway in this

area, such as the NATO AWACS program, the new U.S. reconnaissance aircraft, TR-1, the Joint Tactical Fusion Program, which builds on the earlier development of the Battlefield Exploitation and Target Acquisition System (BETA), and the Integrated Operational NUDETS Detection System (IONDS), which will provide global information on nuclear detonations.[16]

To fulfill the aims of NATO strategy, especially that of convincing Soviet leaders to cease hostilities and withdraw, military and political leaders also need assessments of the global political situation, especially in the Soviet Union. This would help them judge the probable political effects of their military decisions and the possibilities for negotiated settlement of the conflict. Communication with the Soviet leadership is, of course, an essential element of situation assessment capabilities.

Military Command and Control (C^2) Centers. In the European theater, the most crucial C^2 centers that would receive the situation assessments and make most of the crucial military decisions are the headquarters of SACEUR and its four major subordinate commanders (MSCs). The most important of these MSCs--the Commander-in-Chief of Allied Forces Central Europe (CINCCENT)--directs three subordinates, the commanders of the Northern Army Group, the Central Army Group, and Allied Air Forces Central Europe. Although such centralization of command is an obvious military necessity, it is also an important vulnerability. A few nuclear weapons could remove vital links in the command structure, disrupting or even dismantling NATO's ability to direct its forces, potentially leading to rapid military defeat.

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[16] FY 83 Posture Statement of the U.S. Department of Defense.

Consequently, plans to improve the survival of headquarters and battle staffs are vital, as are plans for alternative command arrangements. Evidence that this problem is taken seriously, at least by the United States, is the Joint Crisis Management Program that will provide U.S. theater commanders-in-chief, presumably including SACEUR, with ground and air transportable C^3 facilities capable of rapid deployment.[17]

Political Decisionmaking Authority. If the small number of NATO military headquarters constitutes a potential vulnerability, consider the problem of protecting the political decisionmakers responsible for the nuclear decision. To quote a recent report, protection for the U.S. decisionmaking authority "may be the gravest weakness of the C^3I system."[18] Plans to improve protection are naturally sensitive, and the details are not discussed in public, but it is clear from the public debate that the United States takes this problem seriously. The problem is wider than the United States, however. If the President is to consult with allies about nuclear employment, he needs to have someone with whom to consult. Consequently, the survivability of allied decisionmaking authority is also a desirable element of NATO's deterrent posture, as is the survival of the consultation apparatus of NATO headquarters. Unfortunately, although the problem is grave, political leaders find it unpalatable to address.

Communications Links. Western Europe is rich in civil and military communications networks that political and military leaders could use to receive situation assessments and to transmit orders to the forces.

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[17] Ibid.

[18] Challenges for U.S. National Security, Nuclear Strategy Issues for the 1980s, A Third Report, Carnegie Endowment for International Peace, 1982.

This richness is such that it ought to be possible for NATO to avoid an overconcentration on a few command nodes and links, the destruction of which could be disastrous. However, by the mid-1970s, NATO's communication system was antiquated and suffered interoperability problems. Consequently, the 1978 NATO Long-Term Defense Program (LTDP) included a major program to rejuvenate NATO's C^3. This included a large number of technical improvement programs, the most important of which is perhaps the NICS (NATO Integrated Communications System) Stage II Network. It will connect NATO headquarters, NATO commanders' headquarters, and NATO national capitals for essential command and control, political consultation, intelligence exchange, and messages concerning nuclear weapons employment.[19]

To many people, the problem of improving C^3 capabilities appears impossibly daunting and potentially a sinkhole for resources spent on new hardware. This may not prove to be the case: U.S. experience so far with its intercontinental force C^3I problem has revealed several procedural, low-cost improvements, especially in taking advantage of the communications-rich environment of Western nations. And, depending on judgments about how much of a role theater forces must play in massive operations, it may not be necessary to provide the same degree of survivability to the theater forces as to the intercontinental. But protecting the theater force direction capability, even through a limited nuclear war, may be difficult given Soviet propensity to attack command and control.

It may prove to be infeasible to have a force direction capability that is completely invulnerable to disruption--disconnections between

[19] U.S. Department of Defense, Rationalization and Standardization in NATO, Seventh Report, June 1981.

command authority and forces that last until C^3 can be reconstituted. Some observers have suggested that this likelihood is a fatal flaw in planning for limited nuclear operations.[20] Their underlying hypothesis seems to be that once nuclear forces are disconnected from command authority, they will begin to launch their nuclear weapons, thus leading to uncontrolled escalation. An alternative hypothesis is that the forces will do nothing except defend themselves until receiving new orders. If the latter hypothesis is correct, the result could be a slow-motion controlled war rather than a rapid uncontrollable one. In any case, national leaders have it in their power to be clear on this point, if they so choose.

NUCLEAR STOCKPILE SIZE

For more than 15 years, the U.S. nuclear stockpile in Europe amounted to about 7000 warheads. And for more than 15 years, various observers have wanted a rigorous explanation of where this number came from. Of course, there was no answer: The number was determined on political grounds, it remained at 7000 for political reasons, and it was reduced in 1980 for political reasons. This is not surprising, because the size of the stockpile attracts political attention and cost is not a significant motivating factor in decisions about its size.

A clear relationship between stockpile size and military missions and capabilities would be desirable. But here the critics of flexible response are correct--the doctrine is of almost no help in providing a standard to judge stockpile size. About the best that can be done is to set upper and lower bounds.

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[20] Desmond Ball, "Can Nuclear War be Controlled?" Adelphi Paper No. 169; John Steinbrunner, "Nuclear Decapitation," Foreign Policy, Winter 1981.

The upper bound might be derived by counting all the potential targets that might be relevant to the theater, assuming that the theater commanders might be called upon to destroy them all sooner or later in a conflict, calculating the number of warheads needed to achieve some desired damage expectancy (e.g., 50 percent), and taking into account prelaunch survivability and delivery inefficiencies. Such a calculation would result in an upper bound in the tens of thousands of warheads.

The lower bound could be derived on the assumption that TNFs should perform only a linkage function, that they would need to execute only a small number of limited nuclear options, which would either resolve the conflict or provide enough information to determine the need for escalation to massive attacks by intercontinental and sea-based missiles. For example, NATO might plan on two options, each of 100 nuclear strikes, at the short, medium, and long ranges. Taking survivability into account would result in a figure between 1000 and 2000 warheads.

These upper and lower bounds leave substantial room for maneuver. Therefore, such factors as the probable political reaction to changes in the status quo and the perceived need at least to balance the size of the Soviet TNF stockpile will continue to dominate stockpile size discussions.

CONCLUSIONS

Over the next decade, NATO faces a number of fundamental decisions about its nuclear deterrent, even as conventional force needs grow in importance. The most important area of concern is the ability of NATO

leaders to direct the kind of controlled and calculated nuclear war called for by the doctrine of flexible response. This area poses a number of difficult challenges because of the need for political consultation among NATO nations over nuclear use, and because of the concentration of military command authority at a few nodes within the prospective theater of war, to name only two reasons. Improvement in force direction capability would seem a politically noncontroversial issue on its face. But any issue remotely associated with nuclear release can be politically explosive in Europe, and the American debate on C^3I has shown that such improvements can easily be misinterpreted as planning to "fight and win" a nuclear war, rather than as improvements in deterrence. Thus, costly or otherwise visible steps to improve NATO's force direction capabilities, such as improved survivability for NATO headquarters, could touch off political controversy.

Two other important issues on the agenda are the modernization of short-range (or battlefield) nuclear systems and the future of dual-capable aircraft. The first issue is already attracting substantial political attention, and substantial pressure is growing for the reduction or elimination of such systems. Although there are political attractions to such a course, following it to its extreme could be harmful to the deterrent value of NATO's TNF.

The future of dual-capable aircraft is a complex issue that turns on such problems as cost-effectiveness, employment scenarios, and target acquisition capabilities. But it, too, could generate political heat if it is concluded that a new mid-range missile should be deployed in Europe. Whatever the strength of the analysis, the legacy of the LRTNF debate will make any new missile deployments politically difficult over the next decade.

The deterrence planning agenda is therefore full of problems with the potential for political controversy. The current environment is not conducive to a debate on these subjects, and the propensity of NATO's political leaders will be to put the issues off. But if they are put off too long and needed modernization efforts not put in train, the deterrent value of NATO's nuclear forces will wither away.