

The Prospect of Cooperative Security

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The United States is struggling these days with the consequences of its own success. Having encouraged strong industrial democracies in Germany and Japan, we are straining to adjust to their economic competition. Having supplied the world's major operating currency and attracted its investors, we are now working to service a large accumulated debt. And having long promoted abstract ideas of cooperative security, we now face the practical implications of the fact that our principal adversary appears to be taking them seriously.

The "new thinking" advanced by Mikhail S. Gorbachev as leader of the Soviet Union presents a conception of Soviet security strikingly different from that of the past, and one unmistakably resonant with earlier Western ideas. If appropriately developed, the new line of Soviet security policy would materially improve international security and reduce the military requirements of Western defense.

As presented in official and semiofficial pronouncements, the new conception of Soviet security gives overriding priority to the objective of preventing war. In and of itself, that priority is not particularly remarkable or particularly new. The prevention of war has long been the Soviets' fundamental declared intent, as it has been for the United States and all other major powers since the advent of nuclear weapons. But even the incomplete explanations

offered so far make clear that the new declaration is meant to convey a notable shift in perspective — a different diagnosis of the security problem, different conclusions drawn from that diagnosis, and ultimately a different security posture. The shift reflects tensions created by modern weapons technology to which the Soviet Union is unusually sensitive.

Policy Tensions

The universally acknowledged purpose of modern military forces equipped with nuclear weapons is to deter a calculated attack by threatening effective retaliation. That is the primary means by which the Soviet Union and all other states that have nuclear weapons propose to prevent major war. These weapons are so destructive, however, and their means of delivery so fast, that no prudent military organization can be confident that it can meet the strict demands of retaliation. If either of the principal strategic establishments allowed the other to complete a first strike, the effectiveness of subsequent retaliation would be very uncertain. In all probability, a sufficient number of weapons would survive, but the command and control arrangements to direct their use might not. That problem is of particular concern to the Soviet Union, where military operations are conducted under strict and extensive central control.

To make the deterrent threat credible, both strategic organizations have prepared for a retaliation rapid enough to complete the basic command functions — authorization

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and coordination — before a first strike could be fully executed. The distinction between initiation and retaliation thus reduces to a few minutes. Given that strategic forces operate on a global scale and that widely dispersed reconnaissance systems generate massive flows of information between the two organizations, the distinction might not be preserved at all.

That problem is of particular concern to the Soviet Union. In conducting military operations, just as in managing economic production, strict central control inevitably slows responsiveness to the flow of information. Judging from normal peacetime practices, the Soviet Union exercises centralized control over a much broader range of operational activities than the United States does and maintains its military establishment in a state less ready for combat. The United States maintains strict central control over the authority to use nuclear weapons but disperses the authority to maneuver them and maintains a higher state of readiness. Though no intense crisis has occurred to confirm it, the Soviet military forces would appear to compare to those of the United States as a marathon runner compares to a sprinter — a distinct disadvantage if the competition in question is a hundred-meter dash.

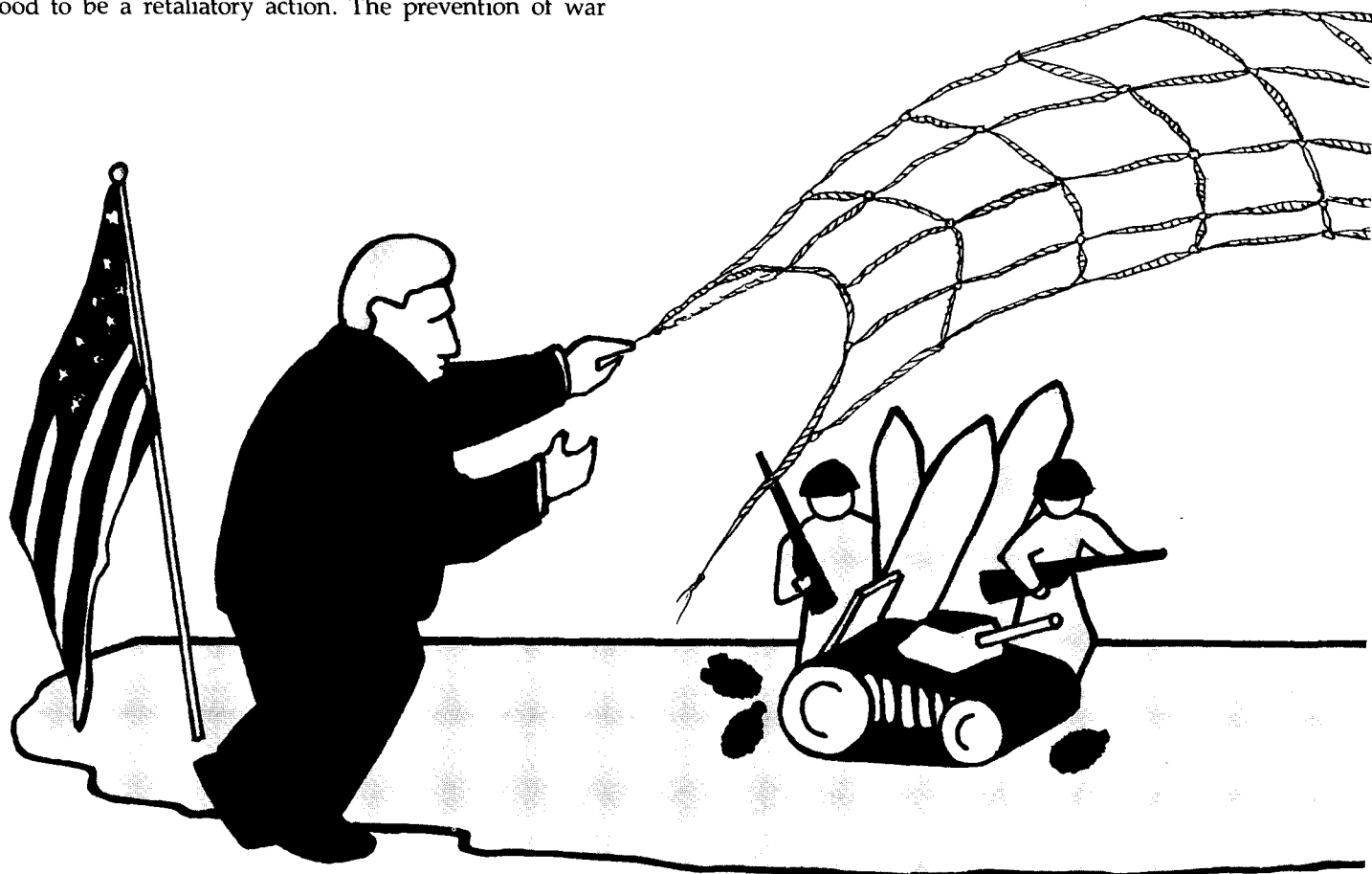
Inherent in this situation is some possibility that a crisis not deliberately initiated or effectively controlled by either side could produce an unintended war, even though all parties involved remained convinced that war would be disastrous. Such a catastrophe could occur if protective alert procedures of the two sides triggered what each understood to be a retaliatory action. The prevention of war

therefore requires not only a strong deterrent effect but also effective control of force interactions. A crisis would produce extreme tension between these two imperatives; and, again, that tension appears to be disproportionately dangerous for the Soviet military establishment.

Soviet Adjustments

As nuclear weapons were developed and deployed, Soviet security policy adjusted the balance between those competing objectives several times, most notably in a doctrinal shift initiated in the middle of the 1960s.¹ Before that time, when Soviet deployments were smaller in number and less protected than those of the United States, Soviet military doctrine had declared that the use of nuclear weapons would be an unavoidable consequence of any major war, a conclusion that justified an explicit preemptive strategy. The Soviets had committed themselves to detecting an impending strategic attack before it was actually under way and to initiating retaliatory operations before they could confirm missiles and bombers in flight. In other words, the marathon runner would have to jump the gun to have any hope against the sprinter.

That commitment entailed an obvious risk of misjudgment, but it offered some protection against a critical vulnerability. If Soviet forces of that period had conceded the initiative and had suffered the full effects of a U.S. attack, their ability to retaliate would have been doubtful.



By the mid-1960s the Soviets had reduced the vulnerability of their strategic forces by increasing their numbers and providing more extensive measures of protection. At that point, when effective strategic parity was in prospect and NATO was formalizing its flexible response strategy, the Soviets altered their official doctrine to admit the possibility that a major war might be waged, most notably in the European theater, without any use of nuclear weapons. Though somewhat skeptical about the feasibility of such a restrained war, they accepted the prospect as a planning contingency and admitted as a corollary that if it occurred they would not initiate the use of nuclear weapons against the United States. Hence, in that instance, they could not execute their previously established doctrine of strategic preemption even though a war in Europe would provide the primary warning evidence on which the decision was to be based.

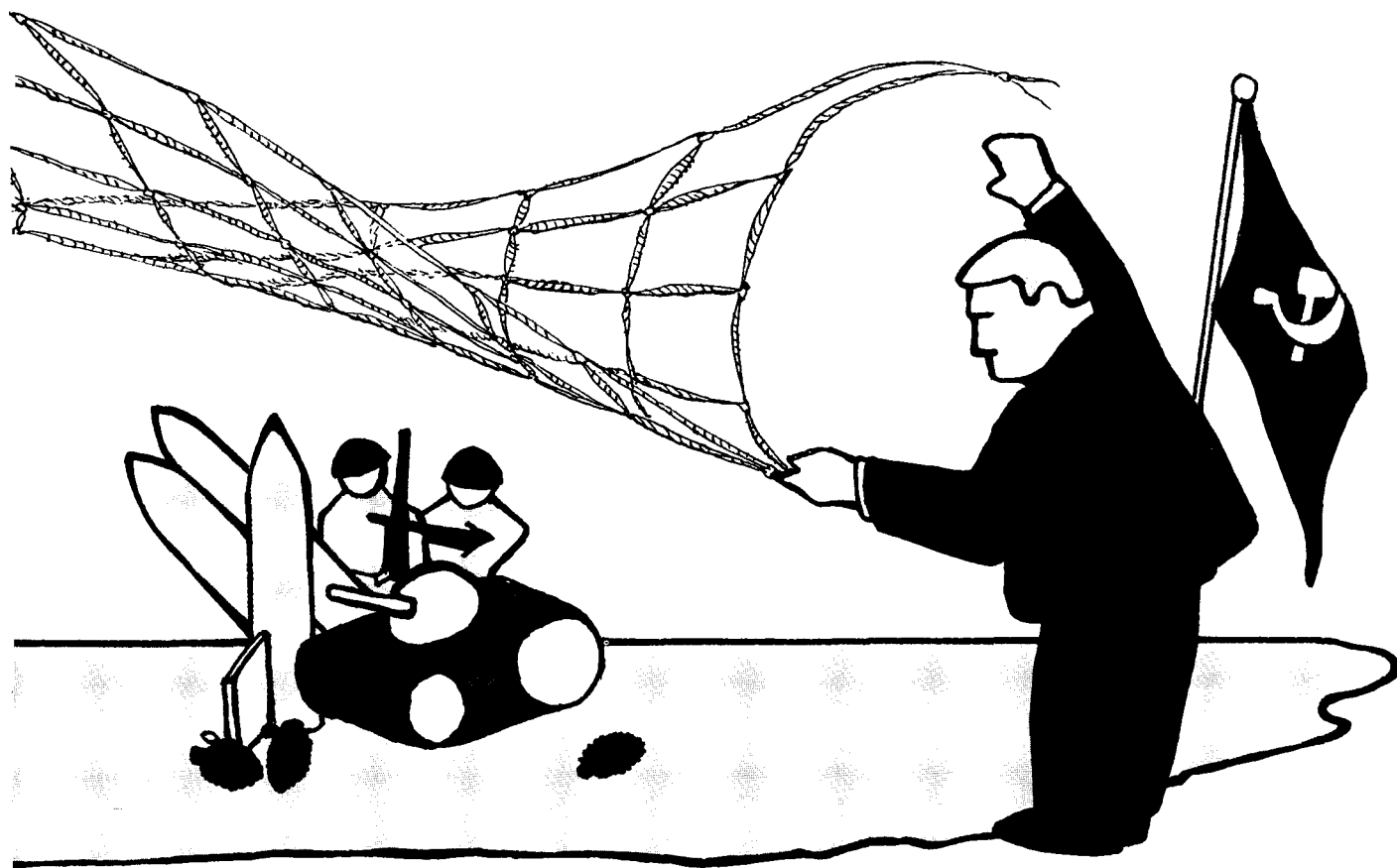
Carrying out the revised logic, the Soviets set a requirement for their conventional forces to engage in rapid, decisive, offensive operations against Western Europe in the initial stages of such a war, in effect transferring the preemptive strategy from nuclear weapons to conventional forces. If they did not win quickly in Europe, they calculated, they would surely lose eventually because of superior American economic and technical potential.

This doctrinal shift was implemented by a surge of investment in Soviet conventional forces that ran from the late 1960s through most of the 1970s. The sustained

investment substantially improved the ready capability of Soviet conventional forces. It also spurred NATO to make a greater investment in its forces, particularly in the application of advanced technology for attacking the infrastructure of Soviet forces far behind the immediate battlefield. Because that capability was designed to stop the planned Soviet advance into Western Europe by stopping the forward movement of reinforcements, it also would have to be used in the earliest stages of war.

The net effect of the mid-1960s doctrinal change, therefore, and of the operational configuration of forces that emerged from it, was to impose on conventional forces the pressures for rapid action and the resulting volatility under crisis conditions that Soviet planners had sought to remove from nuclear forces. Since conventional forces on both sides in the European theater were extensively equipped with nuclear weapons as well and inclined, at least on the Western side, to use them early in the course of any major engagement, the adjustment of the 1960s did not resolve the underlying problem but may have even aggravated it by attaching to the nuclear arsenals a conventional fuse that was easier to ignite.

The current shift in Soviet operational doctrine is more radical. Preemption is no longer to be a strategic option and the occurrence of global war is no longer to be the central contingency of general security planning. To maximize the chances of avoiding war, as distinct from those of winning it if it does occur, Soviet forces are to be put in a more defensive posture. Nuclear forces are to be sized and configured strictly to retaliate and conventional forces



strictly to hold their positions. Overall security, moreover, is not to rely solely, or even primarily, on unilateral military action but rather on international cooperation.

The calculus implicit in these principles accepts some risk about the potential outcome of a war in order to increase the likelihood that war will not be initiated. It assumes that there is no inexorable reason for war between the Warsaw Treaty Organization (WTO) and NATO and that Soviet national security can safely rest on the expectation that major war will be indefinitely avoided. It also assumes that maintaining deterrence is a less urgent security problem than maintaining control of the interaction of forces. These assumptions make stability the central consideration in managing the balance of military forces. They also shift the element of initiative in security policy entirely into the realm of diplomacy. Initiative on behalf of Soviet state security is to be undertaken in advance of crisis and is to focus on reducing tension between NATO and the WTO and on resolving, or at least containing, regional conflicts outside of Central Europe.

American Reactions

At their current state of abstraction and completeness, these Soviet doctrinal developments are unlikely to be convincing to the United States. Most Americans heavily discount any Soviet statements of constructive intent; for some it is virtually axiomatic that such statements are deliberate efforts to deceive.

The United States, moreover, does not vest doctrinal prescriptions with anything like the significance they have for the Soviet planning system and could not readily respond in kind even if there were a general willingness to suspend disbelief. The natural American reaction is to await specific results with polite but skeptical interest, imposing on the Soviets the burden of proof much as a judge would do to a plaintiff making an extravagant claim.

The problem with that reaction is that the United States itself must be involved in any systematic implementation of the Soviet doctrinal developments. Though the new line of Soviet policy clearly implies a large reduction and restructuring of military forces, the Soviets are unlikely to make such changes unilaterally. NATO and the WTO have so formalized their security requirements in reference to the other that the design, the scheduling, and the specific implementation of structural reform is now a mutual affair.

Disengaged skepticism, moreover, does not accord with American interests. The need to reduce the federal budget deficit will almost certainly result in lower defense budgets, a fact that raises the U.S. stake in mutually organized restraint on military forces. Although traditional security commitments can be preserved despite a declining defense budget, that effort requires much stronger discipline in the internal allocation of resources than the U.S. political system has ever been able to produce (*see p. 63*). Such discipline is unlikely to be achieved unless the related discipline of integrating force posture and arms control arrangements is also pursued.

In addition, for some U.S. allies — most notably West Germany, population dynamics compound financial pressures on the defense effort. The number of people eligible for military service in the Federal Republic will decline by 41 percent from 1987 through 1995, a stark fact that dictates an undeniable interest in force reductions. Passive skepticism about Soviet doctrinal initiatives and defensive reaction to the diplomacy emerging from them are simply not consistent with maintaining a leadership position either in NATO or in other alliances. If the United States does not muster both the wit and the will to shape the outcome of a cooperative security arrangement, its international stature will assuredly decline.

For all these reasons the combination of opportunity and challenge inherent in the emerging Soviet security conception exerts powerful pressures on U.S. policy. By themselves, these pressures may not be sufficient to compel new lines of American thought, but they do create the condition for new assumptions to take hold and for a new synthesis of American interest to form.

Potential Outcomes

Both the logic of the emerging Soviet security doctrine and the force structure that would result have been outlined in the course of exchanging arms control proposals. The Soviet agenda was set forth in appeals for conventional force reductions in Europe issued by the WTO in June 1986 and May 1987, and in a program for strategic force reductions presented at the summit meeting in Reykjavik, Iceland, in October 1986. Together the two initiatives suggest a comprehensive regulation of the military balance that would make it much more consistent with the new security conception than it now is.

The U.S. and allied response to these initiatives has been rather contentious in tone and sluggish in timing, but it is not as negative as immediate reactions would suggest. One part of the Reykjavik agenda — the elimination of intermediate-range nuclear weapons — has been formalized in a treaty and is being implemented. That accomplishment has imparted some momentum to the remainder of the program.

Apart from that treaty, the details of the projected arms control arrangement have not been completely specified; the conventional force initiative is particularly vague. With some simple logic and a little common sense, however, the potential outcomes can be inferred. The intricacies of bargaining maneuvers, political disputes, and bureaucratic staff work introduce great uncertainties about the timing of arms control arrangements, but in the end the results are largely determined by underlying national interest powerful enough to be both decisive and apparent.

Strategic Force Reductions

One thing apparent is that the number of nuclear weapons deployed on both sides did not result from any coherent calculated plans, but from a sequence of political decisions

whose net results did not conform to any of the many participants' earlier intentions. Relating the size of the arsenals to the strategic purposes they are meant to serve has largely been an exercise of rationalization after the fact, and it is not surprising that the exercise has inspired attempts to revise the original decisions. In exchanging proposals for 50 percent reductions in strategic forces, the United States and the Soviet Union are tacitly conceding that their current deployments exceed essential deterrent requirements.

An exact measure of these essential requirements has never been officially proclaimed, in part because it is difficult to form a consensus and in part because it would be awkward to admit candidly that any reasonable measure would fall well below existing deployments. Given the obvious vulnerability of military organizations and industrial societies to the effects of nuclear weapons, however, there is little mystery about the limits of what could be considered essential. In both the United States and the Soviet Union, roughly 70–75 percent of industrial capacity is contained in 1,500 circular areas over each of which a single weapon could spread lethal blast and thermal effects. Attacking any substantial number of these targets would devastate both the society and the economy of the victim. The same number of weapons could eviscerate the infrastructure of either military organization, and the targeted military installations overlap with urban-industrial targets. If deterrence works at all, it would presumably work at these levels of threat.

Moreover, as a practical matter, adding yet more weapons to a theoretical retaliatory attack does not add much to its functional consequence. The first 1,500 to 2,000 weapons would so severely damage the military and industrial organization of either country that additional pounding would simply waste offensive assets. Whether the purpose is to punish an aggressor's society or to incapacitate its military establishment, 2,000 is about the limit for the number of nuclear weapons that can be used efficiently.

The presence of more than 10,000 weapons in each of the deployed arsenals has been justified by the idea that there is safety in numbers. Both sides claim that deployments larger than actually required for effective retaliation are necessary to ensure that enough weapons would survive an initial attack. That theory of protection, however, inevitably produces reciprocal fears of preemption, since the excess capacity could also be used to initiate an attack.

Trends in strategic weapons modernization have compounded the problem by emphasizing advances in offensive capability (largely the accuracy of delivery and weapons yield) rather than improvements in protective measures. In particular, two of the principal new U.S. weapons programs — the MX ICBM and the Trident II submarine-launched ballistic missile — are no more protected than the weapons they replace, but they are a much greater threat to the hardened silo installations that constitute the bulk of the Soviet strategic force.

An obvious way to stabilize the strategic balance, therefore, and to tailor it to the new security conception is to

remove the excess offensive capability on each side, in effect substituting regulation for redundancy as a method of protection. That could be accomplished by reducing deployed forces to a level near the ceiling for efficient retaliation and by limiting modernization to measures that shelter weapons from direct attack. Under such arrangements neither side could initiate an attack on the opponent's strategic weapons without weakening its ability to cover the industrial and military infrastructure targets that embody the deterrent effect. Moreover, if the number of warheads are limited relative to the number of missiles and aircraft that carry them, there are several designs for protecting deployed missiles that would make this trade-off with the basic deterrent requirement prohibitively severe.

Though it has not yet been clearly articulated in formal negotiations, this distinction between an essential deterrent requirement on the one hand and preemptive attack capability on the other is fundamental to the design of an enduring strategic force reduction agreement. The legitimacy of a deterrent capability must be conceded as the only acceptable justification for those weapons that are allowed. Neither side can responsibly concede the legitimacy of a preemptive attack capability, and the denial of that capability is the main reason for undertaking strategic force reductions.

In practical terms the distinction denotes different types of targets. Those installations necessary to conduct general military operations would presumably be included in the essential deterrent requirement against which a retaliatory deterrent threat is accepted. Strategic weapons launchers and their immediate command facilities would presumably be excluded from that requirement, and the capacity to attack such targets would be limited to the greatest extent practical.

A Design for Defensive Deterrence

The principle of protecting deterrence and denying preemption cannot be translated into a level and configuration of strategic forces with mathematical precision. But the basic design of forces that would approximate that criterion can be derived by applying the standard parameters used to measure the effect of weapons — number, yield, accuracy, reliability — and the standard model used to simulate the exchange of forces having these characteristics. Such calculations can hardly predict the realities of an actual war, but they do embody institutionalized expectations in both the United States and the Soviet Union. It is these expectations that the deterrent threat is meant to influence.

Brookings and the Lawrence Livermore National Laboratory recently used a simulation model embodying these standard calculations to compare current strategic forces with those that might result from agreed reductions.² Each side was first assumed to have inventories of 10,000 weapons, roughly the number available under current levels of deployment. The model assigned weapons to

targets to achieve the maximum expected effect and then calculated a probable result. The assessment indicates that a Soviet attack on the United States would use approximately 4,000 weapons to destroy more than 7,000 U.S. warheads but would leave 2,900 U.S. warheads available for retaliation. A U.S. attack on the Soviet Union would use 4,400 weapons to destroy 8,300 Soviet weapons, but 1,700 Soviet weapons would survive to retaliate. The exchange ratios — 1:1.8 for the Soviets and 1:1.9 for the Americans — favor the attacker as do the balances of remaining weapons — 2.1:1 for the Soviets and 3.3:1 for the Americans. The U.S. force performs somewhat better than the Soviet force.

A second simulated exchange assumed that forces had been reduced to 3,000 warheads on each side and configured for maximum protection. The most effective preemptive strike weapons — the U.S. MX and prospective Trident II missiles and the Soviet SS-18 — were removed, and each side was assumed to have deployed 1,000 single warhead ICBMs in a mobile basing mode.

If the attacker completely surprised the victim under that configuration, the first few hundred warheads would destroy nearly 1,000 submarines, bombers, and ICBM warheads not on alert. But thereafter the efficiency of the attack would decrease to such an extent that it could not be pursued without the attacker being disarmed and the victim left with more than 1,000 warheads for retaliation. In contrast to the first scenario, the exchange ratios and residual force ratios flip in favor of the defender, as the central principle of protecting deterrence and denying preemption would require. Moreover, there is simple equity in the fact that at the reduced level U.S. and Soviet forces appear to perform equally well.

In this assessment, essential retaliatory requirements are adequately covered at both the 10,000 and the 3,000 warhead levels, demonstrating that the strong existing deterrent effect would not be materially diminished by even a drastic reduction in forces. The main consequence of such a reduction would be to change from positive to negative the incentive to initiate a preemptive strike.

From the perspective of deterrence theory, that change appears to be of little practical significance as long as an adequate retaliatory capacity seems ensured. But from the perspective of crisis control, which the Soviets are apparently trying to advance, the significance is much greater. As long as an incentive to preempt exists by these methods of assessment, both sides in their prepared plans will assign available weapons to attack strategic weapons targets, and the operating forces will train to complete these missions as rapidly as possible, since they make little sense unless the timing is preemptive. That feature of planning combined with the basic threat to the integrity of the command systems creates much of the impulse for preemption that could be exceedingly dangerous in a crisis.

A reduction and reconfiguration of forces along the lines of the 3,000 warhead example described here would decrease this impulse. For both sides that fact is probably significant enough to impose its logic on an eventual strategic arms agreement.

Conventional Force Limitations

In keeping with the principle of preserving deterrence, a strategic force with 3,000 warheads would give the United States ample capability to threaten a limited number of targets, whose destruction nonetheless would make an invasion of Western Europe infeasible. Strictly in terms of military capability, therefore, the strategic force reductions would not significantly decrease the particular threat U.S. strategic forces pose to conventional aggression in Europe. But the reduction undoubtedly would diminish political confidence among members of NATO.

Throughout its history, the alliance has believed that its conventional forces could not withstand a full WTO assault, and its European members have openly doubted whether the United States would use its strategic weapons to defend them if it was not under attack itself. In the late 1950s, after the Suez crisis and the launch of Sputnik had crystallized European misgivings about U.S. strategic protection, NATO supplied its forces with thousands of nuclear weapons, whose presence in the area of potential conflict was accepted as a political guarantee that more remotely located forces could not provide. The greater vulnerability of these NATO forces was discounted in the strategic calculus, but it affected the operational posture that evolved. For more than 30 years NATO has ingrained in its commanders a strong inclination to use their nuclear weapons early in the course of a major battle. That traditional inclination would be strengthened if strategic force reductions were not accompanied by a reduction in the apparent threat of invasion, and would eventually be manifested in a politically charged program to modernize the tactical nuclear weapons arsenal.

That sequence of events would reinforce the countervailing strategy the Soviet Union adopted following its adjustment in doctrine in the 1960s and thus contradict its new security concept. Over the past decade Soviet tactical air forces have been concentrated in forward positions, with an evident intention to conduct a conventional air interdiction campaign against NATO's nuclear weapons. Such a campaign would be much more effective if it began just as NATO began to move its tactical nuclear weapons from their peacetime storage areas. But in the midst of a crisis, Soviet commanders would face a severe burden in judging whether the movement of those weapons indicated a commitment to use them or simply a desire to protect them from attack. The burden would fall on NATO commanders if they did not move to protect their weapons. This tension between the operational postures of the two alliances — one of the more likely triggers of an unintended war — would be even worse if an agreement on strategic weapons increased reliance on tactical nuclear weapons.

Cooperative security therefore requires not only that Soviet conventional forces be put into a more defensive posture, as the new Soviet operational doctrine demands, but also that NATO subordinate its reliance on tactical nuclear weapons to plans for a strictly conventional defense of forward positions. From the perspective of deterrence,

Table 1. Conventional Force Comparisons

	NATO	WTO	Ratio WTO: NATO
<i>Total military manpower</i>			
High estimate	3,000,000	4,000,000	1.3
Low estimate	2,385,000	2,292,000	1.0
Mean	2,696,300	3,573,000	1.3
<i>Main battle tanks</i>			
High estimate	22,200	54,300	2.4
Low estimate	13,500	32,400	2.4
Mean	19,000	47,000	2.5
<i>Armored vehicles</i>			
High estimate	38,400	94,800	2.5
Low estimate	28,900	42,000	1.5
Mean	33,400	68,400	2.0
<i>Anti-tank missiles</i>			
High estimate	13,300	35,400	2.7
Low estimate	10,100	16,600	1.6
Mean	11,900	23,900	2.0
<i>Artillery/mortars/multiple launch rocket systems</i>			
High estimate	15,300	46,500	3.0
Low estimate	10,600	23,800	2.2
Mean	12,600	34,700	2.8
<i>Combat aircraft</i>			
High estimate	4,300	7,700	1.8
Low estimate	3,000	5,900	2.0
Mean	3,600	7,000	1.9
<i>Division equivalents</i>			
High estimate	107	192	1.8
Low estimate	88	101	1.1
Mean	96	136	1.4

Note: Estimates are for the entire European Theater (Atlantic to the Urals). The range of estimates is partially caused by differences in definition of each weapon category. High estimates often include weaponry that could be considered marginal to that category. Low estimates can be caused, in part, by an unusually narrow definition of the weapon category. The mean, and its ratio, is a product of the full range of sources, not simply the high and low estimates. Figures are rounded.

Sources: British Secretary of State for Defence, *Statement on the Defence Estimates 1988*, vol. 1 (London, 1988); Bundesminister der Verteidigung, *Streitkräftevergleich 1987 NATO-Warschauer Pakt* (Bonn, 1987); John Collins, *US/Soviet Military Balance: Statistical Trends 1980-1987* (Congressional Research Service Report 88-425S, April 15, 1988); Anthony Cordesman, *NATO Central Region Forces* (Jane's, 1988); Department of Defense, *Soviet Military Power 1988* (GPO, 1988); International Institute for Strategic Studies, *Military Balance 1987-1988* (IISS, 1987); testimony of Phillip A. Karber, *NATO Defense and the INF Treaty*, Hearings before the Senate Committee on Armed Services, 100 Cong. 2 sess. (GPO, 1988), part 1, p. 230; Phillip A. Karber, "In Defense of Forward Defense," *Armed Forces Journal International* (May 1984), p. 80; interview with Phillip A. Karber, *Armed Forces Journal International* (June 1987), p. 120; and NATO Information Service, *NATO and the Warsaw Pact: Force Comparisons* (NATO Information Service, 1984).

this matter is of limited significance, since even with a separate strategic force agreement, calculated aggression in Europe has no rational basis. From the perspective of rendering crisis interactions more manageable, however, the changes would be of great importance. No other circumstance worldwide could strain the two military establishments as seriously as a mutual alert in central Europe. If that situation were stabilized, all other potential crisis engagements would be notably eased.

This central principle for designing a more stable conventional balance in central Europe is consistent with the policy declarations of both alliances that each should be guaranteed an effective defense of its own territory but denied the assets necessary to conduct a successful offensive against the opposing alliance. Moreover, since a successful defense is generally believed to be easier to achieve than a successful offense, particularly if defensive posi-

tions are carefully prepared, simple equity produces the desired result. If NATO and WTO conventional forces had equal capability, then neither could attack with confidence, both could be assured of their territorial integrity, and the pressure to initiate operations under crisis circumstances would ease.

Measuring Equity

The problem comes in the measurement and certification of equity. Very few of the recognized ingredients that contribute to conventional military power are equal between the two alliances (see table 1). Nor are their geographic positions, their social conditions, or their economic and technical potential, all of which affect how much a given military capability contributes to overall security. No professional consensus has formed on methods for calculating conven-

tional military capacity, nor is one likely to emerge soon. The assertion or denial of equity are matters of judgment about which there are many opinions.

For some, that is effectively the end of the story: the prospect for agreement is destined to be overwhelmed unless an acceptable basis for designing it is found. Advocates of this view usually cite the long unproductive negotiations on mutual and balanced force reductions in Europe as historical evidence for their expectation.

But again, that natural reaction seems too negative for the circumstances. It undervalues the power of a new security conception operating within the centrally planned Soviet system. It undervalues the influences operating on the more diffuse political system of the United States, most notably, the fiscal pressure on the defense budget. Despite the analytic disagreement that besets the topic, a political deal could be struck in which each side improved its security and relieved its longer-term investment burden at the cost of adjusting long-established planning assumptions and habits of unilateral decisionmaking on matters of mutual security. As has regularly happened in the course of military history, political actions might well precede a well-formulated rationale.

The outline of a potential agreement is not difficult to anticipate or even to calculate if appropriately modest claims are made about the calculation. The WTO is acknowledged to have more tanks, more artillery, and more organized ground combat units than NATO, and these disparities are at the core of NATO's traditional fears of a conventional invasion. NATO's comparative advantage is believed to lie in the quality of its forces — tactical aircraft, in particular, and more generally its ability to apply advanced sensing and information processing technologies to new weapons applications. That sets up incommensurate terms of exchange — current capability of WTO for future potential of NATO; ground force capability of WTO for tactical air capability of NATO. Such trades are the despair of analysts, political speech writers, and most officials facing an imminent election or other political accounting. They are, however, the delight of visionary leaders because they offer the potential for dramatic redefinition, and that certainly seems to be Gorbachev's attitude.

A deal designed to adjust the conventional balance in Europe — and to be dramatic in scope — would consist of four main elements. First, the size of fully mobilized conventional ground forces would be reduced, and the reduction would be substantially larger for the WTO than for NATO. The point of this measure is to reduce the disparity in aggregate firepower — from a ratio of 1.7:1 in the last officially published NATO estimate to one noticeably closer to unity. Second, some active units would be relocated away from the inter-German border, and this repositioning would also be disproportionately large for Soviet forces in East Germany. The purpose of this measure is to reduce the potential for a rapidly mobilized surprise attack; that potential could be reduced even further by expanding regulations on the movement and exer-

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cising of military units to make each alliance's operations more transparent. The number of active units remaining after these measures were implemented would be sufficient to maintain the coherence of the WTO military organization and the predominant Soviet role in it. Third, basic military units would be reconfigured and standardized to constrain their individual offensive capability.

These three measures would require that the manning and equipment levels for some fundamental organization unit — most plausibly a regiment — be defined and regulated. The allowed number and required location of these units would be set for each side and would provide the basis for controlling and verifying particular items of equipment strongly associated with offensive missions. Large concentrations of artillery ammunition, for example, would not be allowed in forward positions. Because these stocks are massive and difficult to move, a successful offensive operation requires forward positioning, whereas a defensive strategy logically demands protective dispersal in depth. Similarly, large concentrations of bridging equipment would be prohibited in forward positions, and mine-clearing capabilities even more severely restrained.

Fourth, to balance the disproportionately large reductions and redeployments of WTO ground forces and to alleviate their fears of NATO technical superiority, there would be a corresponding definition, reduction, and redeployment of those tactical air units that are equipped and trained for ground attack missions deep into the opponent's territory. Restraints would also be placed on the rate at which the allowed units could be modernized. Both measures would disproportionately affect NATO's capability, particularly as it has been projected in recent defense plans.

Outer Boundaries of Agreement

The political deal embodied in these four adjustments primarily affects the United States and the Soviet Union.

Each would be formally accepting restraints that would probably be independently imposed anyway as the two countries manage their defense budgets. The Soviet Union knows it will be modernizing its conventional forces at a technical and economic disadvantage compared with the Western alliance; the logic for reducing the base force and the mission aspiration is therefore compelling. By focusing modernization efforts on a smaller force and a more realistic objective, the Soviets can produce security with the assets they have, whatever the NATO defense program might be. If the reductions can be used to encourage or to formalize technical restraint in NATO, so much the better from the Soviet viewpoint.

Conversely, the emerging pressures on the U.S. defense budget are likely to hold the development of very sophisticated deep interdiction capability well below what has been planned, giving the United States its own reasons for formalizing the arrangements. The incentives operating in the background on both sides make the deal feasible, even likely, despite the conceptual complexity and analytic difficulty of defining and justifying it.

If the deal is to be struck, however, this political logic must be incorporated in concrete measures. No matter how arbitrarily it is done, each side will ultimately have to determine the number of units to be reduced, redeployed, or reconfigured, and any explicit connection between the actions of the two sides will set practical terms of exchange. In the absence of a widely accepted calculus, anticipating how the necessary judgments about conventional forces will eventually be made is much harder than it is in the case of nuclear weapons. Nonetheless, some rough boundaries can be drawn within which a mutually acceptable outcome can be plausibly expected to fall.

One boundary concerns the total conventional force assets that each side could potentially assemble in central Europe. Current intelligence estimates indicate that the WTO might be able to mobilize 110 divisions after a 120-day preparation period. By that time NATO could have 49 divisions in position to resist. Because divisions in the two alliances are not the same size and because their standard level of equipment varies, most comparisons begin by determining the ratio of available firepower that the two forces would bring into battle. The comparison of current WTO-NATO firepower suggests that NATO forces committed to the defense of their forward positions and unwilling to retreat to gain tactical advantage might be damaged to the point of organizational disintegration within 5 days and be completely routed within 15. A net reduction of roughly 45 divisions would have to be extracted from the WTO forces to make the calculated assessment a stalemate with no loss of NATO territory. If NATO invested more in prepared defensive positions, the stalemate might occur if the WTO forces were reduced relative to NATO by 30 to 35 divisions.³ Net reductions of these magnitudes can be taken as an outer bound for the amount necessary to deny the WTO offensive conventional capability in central Europe. Many would consider the balance acceptable with a lesser adjustment; there is no

reasonable basis for demanding more.

A second boundary concerns the interaction of tactical air forces. The current inventories of NATO and WTO tactical aircraft have a different mix of purposes: NATO emphasizes both air superiority and ground attack and the WTO forces concentrate on air defense (*see table 2*). If both forces committed themselves to an initial battle for air superiority and if NATO aircraft proved to be at least twice as effective as their WTO counterparts, NATO would establish dominant air superiority in three to four days and would emerge with roughly 2,000 fighter and attack aircraft at its disposal.

NATO would win more quickly and with more surviving aircraft if the WTO forces diverted their attention from the air superiority battle to pursue an interdiction campaign against the NATO nuclear storage sites. If stalemate in the air battle is to be the agreed outcome, then the NATO tactical air capability would have to be reduced by a net of about 1,000 aircraft, that is, by about 14 organized air wings.

Taken together, these two simple assessments suggest that a trade of up to 14 NATO tactical air wings for up to 30 to 45 WTO ground force divisions would achieve a balance that would allow both sides to be confident in projecting stalemate as the likely outcome of an engagement in central Europe. That implicit logic is directly bolstered by considering the performance assumptions for aircraft operating against ground force units.

The primary objective of NATO aircraft in such an engagement would be some 45 Soviet divisions that might be within two days march of the immediate battle line; the central question is whether the aircraft could prevent these divisions from arriving at the point of battle with enough capacity to fight effectively. A fully equipped Soviet division contains about 1,250 tracked vehicles — tanks, infantry fighting vehicles and armored personnel carriers, self-propelled artillery, and air defenses. To neutralize those divisions, the aircraft must reduce that inventory by about 50 percent in two days — the same level of attrition at which it was assumed that NATO forces would become ineffec-

Table 2. Composition of Tactical Air Forces, European Central Front

	NATO	WTO
Fighter/attack aircraft	2,800	1,250
Interceptors	800	2,000
Air defense missiles	1,350	2,200

Sources: Congressional Budget Office, *U.S. Ground Forces and the Conventional Balance in Europe* (GPO, 1988); and International Institute for Strategic Studies, *Military Balance 1987-1988* (IISS, 1987).

tive. Based on peacetime experience, NATO aircraft could be expected to fly three sorties a day over two days while maintaining 80 percent of their expected performance capability and to each carry eight pods of scatterable munitions, the most effective weapon against tracked vehicles currently available. One thousand aircraft meeting these standards could neutralize all 45 Soviet reinforcing divisions in six sorties over two days if the planes suffered attrition of only 5 percent on each sortie and if 95 percent of their weapons reached their targets. The same 1,000 aircraft could neutralize 33 divisions — enough to stalemate the battle with prepared NATO defensive positions — if they sustained attrition of no more than 10 percent on each sortie and hit at least 80 percent of the targets. Though this performance assessment is idealized, it does fall within the theoretical capability of the aircraft and thus defines an outer boundary of potential agreement.

Implications

The theoretical objective of sharply reduced, protectively configured strategic forces and the more loosely defined vision of a stabilized conventional balance in central Europe offer substantial scope to implement the doctrinal and diplomatic initiatives emerging from the Soviet Union. They also offer a major opportunity for the United States to improve security while relieving its long-term financial burdens. The force reductions outlined here would lower the U. S. defense budget by nearly \$15 billion a year in fiscal 1989 dollars. Over the normal life cycle of the weapons systems in question — approximately 20 years — these additional savings would total more than \$300 billion — the equivalent of an entire year's defense budget.

Whether these potential force reductions will actually be achieved in whole or in part is unknown, but the prospect alone is sufficient to alter the political conditions of international security and thereby to pose security interests for the United States that extend well beyond the standard conceptions of deterrence and containment formulated during the cold war.

In principle, the United States has compelling reason to initiate a policy adjustment comparable in spirit to the Soviet doctrinal developments but more specific in content and broader in scope. Even full implementation of the strategic force reductions and conventional force limitations outlined here would not establish a complete regime of cooperative security. Any diplomatically feasible reduction of strategic forces, for example, would necessarily continue restrictions on strategic defenses, but not necessarily extend these restrictions to protect surveillance and communication assets in space. Yet that latter protection is essential for preserving the coherence of the receptive command systems — the most important single element in controlling crisis interactions.

Similarly, this protected surveillance and communication capability must eventually be limited so as to distinguish the legitimate, essential functions of operational control and verification from the unacceptably intrusive

observation required for preemptive targeting.

In general, as the technical determinants of military power shift from developments in nuclear explosives and rocket propulsion to developments in sensing and information processing, the most critical issues of regulation also shift. The problem of reliably preventing war is not just one of correcting force imbalances inherited from the past; even more it is one of avoiding those that have yet to develop.

In practice, however, the United States is poorly prepared to undertake such an initiative. The political process has divided security issues into those that are considered within the context of the federal budget and those that are discussed as part of specific treaty positions. Political debate has largely focused on immediate marginal increases or decreases in the defense budget, on individual weapons projects, on compliance with disputed treaty arrangements, and most recently on a vision of a perfect defense, inspired far more by domestic politics than by strategic or technical reality. The problems of operational interaction that appear to be motivating the Soviet doctrinal initiatives and that are at any rate emerging as leading security problems have been only dimly grasped in the U.S. political discussion, and the policy process within the government sharply separates this subject from the more familiar topics of the defense budget and arms control. Even the projected budget savings are likely to make little impression on American public opinion, and are therefore unlikely to move public decisionmakers.

This disparity between the requirements of security policy and the inherent limitations on its formulation imposed by the nature of the American political system is not easily remedied. The tension between substance and process is clearly a major drama in the evolution of democracy not likely to end soon. One can readily identify, nonetheless, a necessary and constructive first step. The United States will neither initiate its own changes in policy nor react appropriately to Soviet diplomacy until the need to do so is better developed and more widely understood. Nothing can substitute for a more extensive, more penetrating public discussion.

1. The changes in Soviet doctrine and the force structure adjustments associated with those changes have been reviewed and interpreted in Michael K. McGwire, *Military Objectives in Soviet Foreign Policy* (Brookings, 1987); and in Raymond L. Garthoff, "New Thinking in Soviet Military Doctrine," *Washington Quarterly* (Summer 1988), pp. 131–58. McGwire and Garthoff vary in their judgments. But the accounts of both are generally compatible with the interpretation presented here, though neither is exactly the same.
2. A full explanation of these assessments may be found in Michael M. May, George F. Bing, and John D. Steinbruner, *Strategic Arms Reduction* (Brookings, 1988).
3. This comparison and the one for tactical aircraft were developed by William W. Kaufmann and are more fully presented in an occasional paper he wrote entitled "Quantitative Comparisons of Conventional Forces," Brookings, 1988.

William W. Kaufmann

Restructuring Defense

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Defense budgets and the size and composition of the armed forces during the coming five fiscal years from 1990 through 1994 will present the next president with difficult choices. But while the decisions will be painful, the president can set a sensible and constructive course for the Pentagon during his first years in office. Opportunities as well as difficulties await him.

To underscore the complexity of the choices ahead, it is necessary only to enumerate the conflicting pressures that the president will have to take into account. On the one hand, he will be strongly advised that if he is to remove the trade and federal budget deficits and simultaneously meet the rising domestic demand for expanded federal services, he must at a minimum reduce defense expenditures. On the other hand, he will quickly discover that, while the allies of the United States could certainly contribute more than they are now doing to the collective security system, there will be no substitute for U.S. power and leadership in the foreseeable future. America may have become the first among equals, but like the British prime minister, it will remain first by a rather wide margin.

The president will also find out, if he does not already know, that major uncertainties remain about the future course of international relations. The grounds for optimism are considerable in light of the new leadership in the Soviet Union, domestic problems in the USSR and Eastern Europe that are much more intractable than those faced by the United States, progress in the resolution of several regional conflicts, ratification of the intermediate-range nuclear missile treaty, and the possibility of deep cuts in Soviet and U.S. strategic nuclear forces and a reduction in the conventional capabilities of the Warsaw Pact and NATO (see p. 53).

But Soviet military power still remains impressive, and questions linger about the ability of Secretary General Mikhail Gorbachev to survive politically, implement his proposed reforms, and negotiate further arms control agreements unless he can demonstrate that he is successfully curbing the U.S. military buildup. Both he and the president will probably want to hang on to bargaining chips, however low their value on the negotiating table.

Finally, the president will face conflicting pressures from Congress and the Pentagon over the future size of defense budgets. While Congress was exceedingly generous to the Defense Department between 1980 and 1985, allowing a real increase in defense funding of more than 50 percent (the most rapid increase in U.S. peacetime history), it has since become more parsimonious. Not only has funding been reduced by more than 10 percent in real terms; many members of Congress seem bent on holding to that course in the 1990s.

Meanwhile, the military services, having been led to expect continued large increases in each year's defense budget, have continued both to mod-

ernize their forces with the current generation of weapons and to move rapidly to produce a next generation of still more sophisticated and costly armaments.

All told, during the coming decade, the weapons still to be bought in the current wave of modernization, combined with the programs now in the acquisition pipeline, could cost more than \$900 billion. Furthermore, the newer weapons, if deployed, will probably drive up defense operating and support costs, thereby threatening to push future budgets well above the numbers considered by the Reagan administration and Congress.

The Range of Choice

The problem created by these differing expectations is readily illustrated by three numbers. Caspar W. Weinberger, while secretary of defense, hoped to obtain annual real increases of 7 percent in budget authority to fund these ambitious investment plans, although he talked about only 3 percent annual real growth in his last five-year plan and would probably have fought for an annual real increase of 5 percent and a total of \$1,945 billion (in current dol-