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A RAND NOTE

Arms Control Constraints for Conventional
Forces in Europe

Richard Darilek, John Setear

March 1990

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Arms Control Constraints for Conventional Forces in Europe

Richard Darilek, John Setear

March 1990

**Prepared for the
Office of the Secretary of Defense**

RAND

PREFACE

This study attempts to draw together the authors' collective reflections on the potential contribution of constraints on conventional military forces and operations to arms control efforts in Europe. Research for this study was largely completed during the winter of 1988-1989, before specific proposals for constraint measures had been placed on the negotiating agendas of the new European conventional arms control negotiations in Vienna, Austria. The study deliberately avoids making any assumptions about the progress or outcome of those talks. Instead, it seeks to develop a useful general framework for analyzing and evaluating constraints within the broader context of European arms control and force-planning issues.

In producing this study, the authors benefited from insights gained while working on a project in RAND's National Defense Research Institute, a federally funded research and development center. That project focused on operational arms control possibilities in Europe and was sponsored by the office of the Undersecretary of Defense for Policy in the Department of Defense. The project produced a separate report by Paul K. Davis, *Toward a Conceptual Framework for Operational Arms Control in Europe's Central Region* (The RAND Corporation, R-3704-USDP, 1989). As various footnotes in this Note indicate, the authors have drawn upon that report where appropriate. The National Defense Research Institute also provided research support funds that enabled the authors to expand and complete this study during the spring of 1989. Nevertheless, the views expressed in this study are those of the authors. They do not necessarily represent the views of The RAND Corporation, other researchers at RAND, or any of RAND's research sponsors.

An abbreviated version of this study appears in Robert D. Blackwill and F. Stephen Larrabee (eds.), *Conventional Arms Control and East-West Security* (Duke University Press, Durham, N.C., 1989). The authors' thinking about constraints also benefited from a conference held in Moscow during December 1988 to exchange views on drafts written in preparation for the book, which is a research volume from the Institute for East-West Security Studies in New York and which includes chapters on designated arms control issues by both NATO and Warsaw Pact contributors.



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SUMMARY

IN BRIEF

This study focuses on one aspect of potential arms control agreements involving conventional military forces: the use of "constraints." We define constraints as "measures directly limiting or prohibiting current or future operations by military forces" and focus throughout on constraints involving the conventional forces of the Warsaw Pact and NATO. We believe constraints may save money for all parties involved in a conventional arms control agreement. In addition, and probably more important, we conclude that constraints have the potential to reduce the incentives for attack by *increasing the amount and quality of warning time* available to the defending side or by forcing an attacker to launch a constrained offensive. We develop, and apply with hypothetical examples, three criteria for determining whether a particular constraint is a good idea. We also note that because of the difficulties of determining when constraint measures actually constrain an attacker's operations more extensively than a defender's operations, the nations of NATO and the Warsaw Pact should approach constraint measures cautiously lest they reach an agreement that reduces the prospects of a successful defense against large-scale offensives.

DEFINITIONS AND EXAMPLES

We focus here on constraints involving the conventional force operations of the Warsaw Pact and NATO, especially those in the Central Region. Specific examples of such constraints might include requiring that selected zones in Europe be free of particular weapons systems, regulating the removal of ammunition from designated central locations, limiting the size or frequency of military exercises, or establishing observable controls on mobilization procedures of the NATO and Warsaw Pact nations.

To distinguish at the outset constraint measures from force-structure measures is important. Force-structure measures—regulation of the number or type of weapons a nation may possess, such as a reduction by both alliances to 25,000 tanks in the Atlantic-to-the-Urals zone—do have some potential effect on military operations. They have that effect only *indirectly*, by reducing the number or type of potentially available forces. But constraints *directly* regulate operational military factors by prescribing the acceptable zones of deployment for military forces, the times and conditions under which those forces can exercise, or the degree of acceptable change to their training or operational status.

Constraints and force-structure measures also generally differ in the time necessary to break out of each kind of agreement and return previously regulated forces to the preagreement state. To break out of a constraints agreement usually takes days or months, whereas breaking out of a force-structure agreement is likely to take years. For example, a tank that is moved 100 kilometers from the inner German border can cross that border in a few hours; a tank that is blow-torched into scrap must be replaced, and replacing that destroyed tank with a newly produced one can take well more than even a few months. We explore various possibilities for breakout from different types of arms control agreements, and we display these possibilities along a "breakout spectrum."

One final example should suffice to distinguish constraints from force-structure measures. Imagine pulling forces out of the Atlantic-to-the-Urals zone but leaving them in the force structure of the relevant nations. Some analysts treat such measures as if they were reductions in force structure; in our view, they are not. Such measures are constraints, and the difference is more than merely one of terminology. A tank division removed from Germany and placed behind the Urals or across the Atlantic as the result of a constraint can return with the passage of several weeks' time and the expenditure of a few million dollars. A tank division removed by a genuine reductions measure—its equipment destroyed and its personnel demobilized—cannot return until many months have elapsed and billions of dollars have been expended.¹

Within the category of constraints, two major subcategories exist: zonal limitations and activity-oriented limitations. Under a *zonal constraint*, certain types of activities or exercises could be limited to (or barred from) specified geographic zones,

¹The distinction between reductions on the one hand and declaratory measures and confidence- and security-building measures (CSBMs) on the other is often expressed as a difference between "structural" and "operational" arms control. The understanding behind this distinction is that reductions directly affect military force "structure"—that is, the elements (units, equipment, and personnel) that comprise it—while declaratory measures and CSBMs involve the "operations" of military forces—that is, what the forces can do, regardless of how they are structured. Which of these two categories encompasses constraints is not always as clear as it might be. Activity-oriented constraints (for example, limits on exercises) seem to fall squarely into the operational camp. However, deployment-oriented constraints—especially those involving wide-ranging zones from which specific elements of force structure are prohibited—tend to cause definitional problems. To refer to such constraints as structural arms control measures or reductions is tempting, particularly since they seem likely to be negotiated only in the context of a broader, reductions-oriented arms control agreement. Edward Warner and David Ochmanek, for example, consider the removal of forces beyond the Atlantic or the Urals to be reductions. See their contribution "Conventional Arms Reductions Approaches" (Part 1 of Chapter 6), in Robert D. Blackwill and F. Stephen Larrabee (eds.), *Conventional Arms Control and East-West Security*, Duke University Press, Durham, N.C., 1989, pp. 231–257.

typically extending outward from the potential area of contact between the two sides. Examples would include a prohibition on corps- or army-level exercises within 100 kilometers of the inner German border (thus preventing one side from "masking" an attack by concentrating forces in a border region in the guise of a training exercise) or an outright ban in the same zone of tank or artillery units (thus preventing one side from deploying presumably "offensive" weapons in that area). A related constraint would be physically separating the crucial components of large units (for example, separating the front-line combat units in a force from their engineering support). In general, the larger the zones of such constraints, the longer it would take to break out of them—that is, to realign forces or weapons for an offensive—and thus the greater the resulting warning of an impending attack.

Activity-oriented limitations would seek to limit (1) the *numbers* of troops or weapons that would be involved in certain kinds of activities, such as a training exercise, or (2) the *types of activities* that would be permitted, such as training involving both air-defense and maneuver units or a mock crossing of a major river. In general, the more extensive the activities covered or the more crucial such activities are to conducting a large-scale offensive, the greater the warning of an impending attack that would result if the attacker broke out of an agreement to abide by such measures.

MEASURES OF MERIT

Far-reaching constraints on training or exercises could conceivably have significant impacts on operational costs and, hence, on operations-and-maintenance budgets. Such savings, however, are relatively small compared to the savings obtainable from mutual reductions in force structures. Moreover, constraint measures involving the redeployment of forces carry cost burdens of their own and are likely to result in cost *increases* rather than savings, especially during the first years of an agreement. A major factor associated with all constraint measures is the significant cost of maintaining oversight and verifying compliance with arms control agreements.

We illustrate the potential effects of constraints on *warning time* by explaining them in terms of a spectrum of attack options. Operational constraints would be most effective in serving notice of a "first strategic wave" attack—that is, a short-warning attack upon NATO by forward-deployed units of the USSR (supplemented by highly ready, indigenous Warsaw Pact forces)—or by a "second strategic wave" attack, in which the above troops are supplemented by forces from the western military districts of the

Soviet Union.² In both cases, the violation of constraint measures could provide several hours to several days' notice of impending hostilities, depending upon the amount of redeployment or preparation time prohibited by constraint measures. (If additional forces and preparation time were necessary, as with third and fourth strategic wave attacks, still more warning time might be provided by violations of the constraints, although such large-scale preparations so far in advance would likely be detected.) The defender would also benefit if the attacker chose to launch an attack by staying within the limitations of the constraints up until the final minute beforehand, thus forgoing optimal attack capabilities to achieve greater surprise.

Note in all these cases that constraints cannot serve as complete substitutes for force-structure measures. Breaking a constraint provides warning time, but the defender must be able to do something with that warning time to make a difference. A defender with an acute shortage of troops may know well in advance that he is about to fight a losing war, but he will lose nonetheless. Adhering to a constraint may deprive an attacker of some options, but an attacker with overwhelming force will still likely prevail.

To summarize our findings,

- Constraints could buy hours, days, or possibly weeks of useful warning time, but not much more;
- Constraints could provide greater insurance against short-warning attacks by depriving an attacker of the opportunity to make his preparations for such attacks undetected;
- Nonetheless, constraints will not deter a determined attacker who believes that he can ready a much more capable force than the defender.

CRITERIA FOR EVALUATING CONSTRAINTS

In view of the foregoing analysis, we have posited three major criteria for determining the value of a given constraint: defensive asymmetry, clarity, and economy.

²We deliberately use the word *wave* in place of the more familiar word *echelon* because we wish to designate forces according to their readiness rather than according to their place in a particular operational plan. Of course, a great deal of overlap is likely between strategic waves and strategic echelons—for example, the first strategic echelon is likely to consist of troops almost entirely in the first strategic wave—but an overlap differs from an identity. Forces in the second strategic echelon, for example, might come from the third strategic wave if mobilization of third wave forces begins early enough or the attacker is willing to wait long enough to commit the second strategic echelon. In addition, *wave* may be more readily applied to the forces of both alliances; in contrast, *echelon* is closely associated with the Warsaw Pact's offensive doctrine.

Defensive asymmetry refers to the degree to which an attacker is hampered—and a defender helped—by a given constraint measure. Such an asymmetry decreases the incentive for an attacker to attack, and thus can be seen as a factor that should be present in any effective constraint.

Three possible approaches in this regard are (1) limiting concentrations of forces, thereby hampering the attacker (as long as the attacker needs local force superiority); (2) assuming that the Pact's current force structure makes it the more dangerous attacker, and negotiating asymmetrical limitations on Warsaw Pact forces; and (3) focusing constraints on weapons or units especially useful in conducting offensive operations. Whether negotiators can reach agreements on these issues or whether analysts can reliably identify which measures are defensively asymmetrical are open questions.

Clarity refers to the degree to which one side's violation of a constraint provides a clear military and political warning to the other side. Obviously, constraint measures that promote clarity by being precise in defining their limitations, and the implications of violating those limitations, are highly desirable. Constraints that are easy to verify, or that are difficult to verify but provide for a powerful verification regime, are also desirable.

Economy refers to the impact of a given constraint measure on the military budgets of NATO and the Warsaw Pact. As noted above, many types of constraint measures may provide savings, although some (for example, those requiring massive redeployments of forces) will involve significant new costs. Constraints that save money are desirable.

CONCLUSION

Identifying constraints that satisfy all three of the above criteria is a difficult task. Although constraints on the training and movement of units look promising from the standpoint of economy and clarity, their ability to provide meaningful defensive asymmetries is unresolved. Wider-ranging arms control agreements that include force-structure reductions may soon involve constraint measures as well. Therefore, planners should thoroughly understand the value and risks of such measures—and, in particular, should take into account the criteria presented and evaluated here for assuring their potential utility.

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I. INTRODUCTION

Arms control can buy time and money, but not peace. This is our underlying thesis as we move from an introductory discussion of certain basic opportunities and limitations of arms control to a more specific focus on "constraints"—defined here as arms control measures that aim to prohibit or limit the current or future operational practices of conventional military forces, for both NATO and the Warsaw Pact in Europe. In Sec. II, we place constraints within the broader context of conventional arms control measures from the perspective of military planners (as opposed to arms controllers) and suggest the magnitudes of time and money that can be gained from constraints. In Sec. III, we develop and illustrate with examples three criteria for evaluating the potential utility of constraint measures. Finally, in Sec. IV, we summarize our conclusions.

Our focus throughout is on the particular factors that would be important in a war between NATO and the Warsaw Pact on the central front in Europe. We conclude that certain types of measures look promising but may be difficult to achieve. In addition, given the extraordinary complexity of operational arms control issues, we recommend that caution precede enthusiasm in the proposing of or agreeing to constraint measures.

II. ARMS CONTROL AND CONSTRAINTS

TIME, MONEY, AND ARMS CONTROL

Arms control can buy time, because "breakouts" from a treaty take time and, once detected, such violations can serve as a warning to the side that adheres longer to the treaty. In the extra time provided by the alarm bells, the side being warned can take steps that may reduce the chances of war or that may improve its own chances if war should come. During the 1930s, Great Britain might have rearmed after the remilitarization of the Rhineland or after the appearance of "pocket battleships" that violated the spirit, at least, of the Washington Conference. The United States might be able to fly its reinforcements to Europe after detecting highly suspicious Pact activity during a Western inspection on demand of Eastern territory, or the Soviet Union might step up its own strategic defense program after learning of the planned deployment of a U.S. Strategic Defense Initiative (SDI) system that bypassed the Antiballistic Missile (ABM) Treaty. Vigilance, or action induced by vigilance, cannot always dissuade aggressive behavior, but it may well be better than blissful ignorance.

Arms control can also buy—or rather, save—money. Certainly the billions here and billions there in military expenditures allow us to talk, soon, about real money. Arms control agreements may be able to save some of that money for the duration of the agreement. Prohibitions on theater nuclear missiles allow nations to forgo the procurement and deployment costs of planned and budgeted systems, as well as to forgo modernizing nearly obsolescent models of such systems. Adherence to the ABM Treaty in the 1970s presumably lowered expenditures for research and development of antiballistic systems, in addition to producing much larger savings as a result of the decision not to deploy such systems. Reducing the number of troops or exercises in Europe might allow savings in the numbers and, therefore, the payrolls of active-duty personnel, as well as in compensation paid to farmers for damage inflicted to fields by tanks and troops conducting exercises. Indeed, far more money could potentially be saved by arms control agreements involving conventional military forces as opposed to nuclear forces; the funds necessary to support current conventional force postures in Europe, for NATO as well as for the Warsaw Pact, far exceed comparable nuclear force expenditures on both sides. Such fiscal considerations may not be as riveting as issues affecting the likelihood of war, but a billion saved, after all, is a billion earned.

TIME, MONEY, ARMS CONTROL, AND CONSTRAINTS

Where do constraints fit into the general arms control picture? We define constraints as "measures directly limiting or prohibiting current or future operations by conventional military forces." Our focus is on nonnuclear military forces in Europe and, specifically, on the operations or deployments of those forces rather than on their numbers. Examples of constraints include the stipulation of weapons-free zones, regulation of the removal of ammunition from monitored central locations, limits on the size or frequency of military exercises, and controls on mobilization or training procedures.

We should emphasize the need, under our definition of constraints, for a direct link between individual measures and military operations. Although reductions in force structure obviously affect military operations, that effect is indirect and not the result of a specific operational prohibition. Hence, we do not consider force-structure reductions themselves to be constraints, regardless of whether such measures involve reductions in existing levels of weapons and personnel or quantitative limits on future growth. In our view, constraints specifically and directly regulate operational factors such as where nations may deploy their existing military forces, how often and under what conditions these forces can exercise, and what changes can be made in their training status. Constraints, on the one hand, and force-structure measures, on the other, are not necessarily incompatible—indeed, they may be complementary¹—but they are different.²

To see more readily where constraints fit into the overall arms control picture, we can consider how long it would take a nation to violate a particular type of agreement and return its military forces to their preagreement state.³ For example, a global arms control

¹The two kinds of measures may be complementary in both a political and a military sense. In "Will Negotiated Force Reductions Build Down the NATO-Warsaw Pact Confrontation?" Jonathan Dean argues: "Given the probable difficulty of reaching early [arms-control] agreement[s] on reductions, it would be useful for both alliances (and essential for NATO) to accompany its reduction approach in the new negotiations with a series of nonreduction constraints. . . . If NATO governments are concerned that they may be pressured by their own public opinion into accepting Soviet reduction proposals that are intrinsically undesirable, they would be well advised to present constraint proposals that have a chance of acceptance by the Pact and whose acceptance Western public opinion would regard as progress." (*The Washington Quarterly*, Spring 1988, pp. 69, 80, 81).

²We examine only briefly here ways of combining constraints with force-structure measures. For a treatment of both types of measures, but one that focuses on reductions, see Jonathan Dean, "Military Security in Europe," *Foreign Affairs*, Fall 1987, pp. 22-40.

³Note that *breakout*, in the sense we use it here (the time a nation takes to return its military forces to their preagreement state), is slightly different from some previous uses of the

agreement that abolished all nuclear weapons as well as the capacity for generating weapons-grade nuclear materials would, once adhered to in its entirety, take years to undo or reverse: A superpower that "broke out" of such an agreement would have to construct complicated nuclear materials-generating plants from the ground up, as well as readapt or rebuild the complicated weapons that serve as nuclear delivery vehicles. Such a process might take decades.

If, instead, the United States and the Soviet Union agreed to a declaratory measure stating that neither would be the first to use nuclear weapons, or to a confidence-building measure stipulating that neither would conduct an exercise of more than 10,000 troops without first notifying the other, the "breakout time" for such measures would be essentially zero. The president or the general secretary could wake up one morning and decide to do what he had promised not to do. Although intentions can change overnight, the capabilities to pursue hostile (as well as peaceful) intentions would still remain.

Aligning these measures and some other examples along a time line of breakout possibilities produces a "breakout spectrum" (see Fig. 1). Constraints typically fall on the spectrum somewhere between confidence- and security-building measures (CSBMs) and what we call force-structure measures (see Fig. 2). Declaratory measures, which occupy the far left end of the spectrum, involve declarations of intent by participants, for which the breakout time can be almost instantaneous. Of course, CSBMs range from agreements to improve the flow of information among participants through notification of exercises and invitation of observers, as provided in the Helsinki Final Act of 1975, to provisions for on-site inspections, and even to the rudimentary constraints on large-scale exercises in the Stockholm Document of 1986. Nations can break out of the diverse requirements of these measures relatively quickly simply by refusing to participate in an information exchange or by denying access to observers and inspectors.

word, which focus on the time a nation takes to gain a militarily significant advantage from violating a particular measure. These two meanings are similar, but not identical. Our definition of breakout does not depend upon when or whether a violation imparts a militarily significant benefit, only upon when the violating side restores its preexisting military posture.

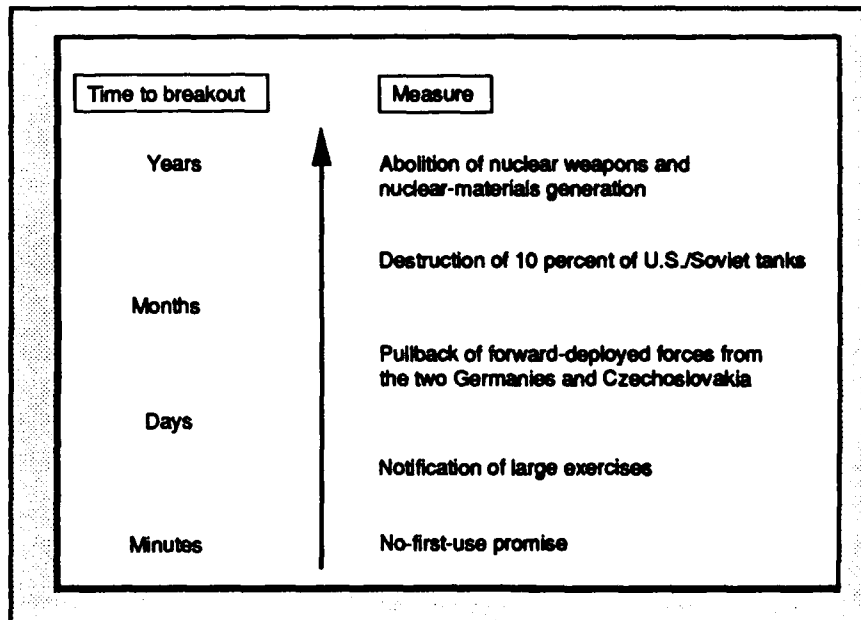


Fig. 1—The breakout spectrum

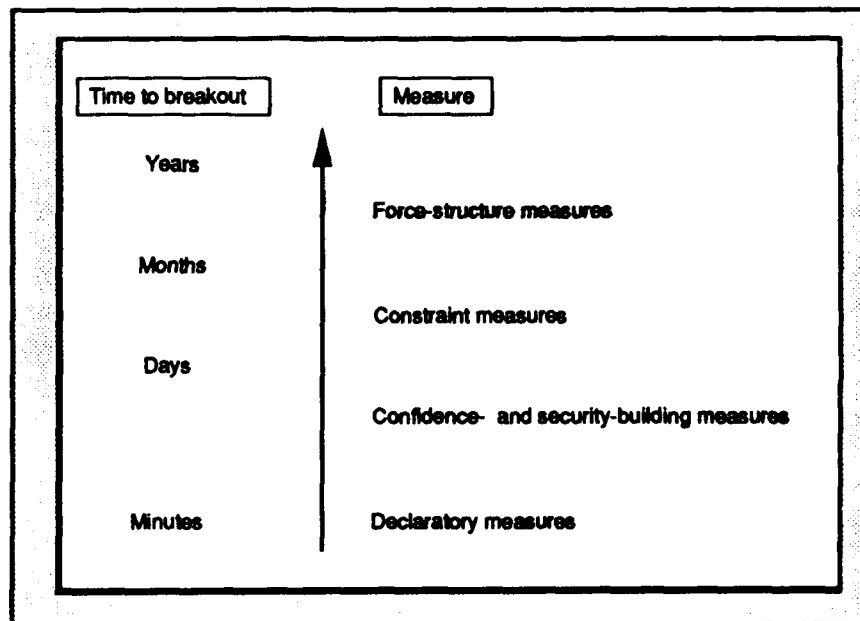


Fig. 2—The breakout spectrum (by category of measure)

Force-structure measures, which occupy the far right end of our breakout spectrum, involve changes in the number or composition of military forces, such as the destruction of weapons systems, the elimination of units, or a prohibition on new types of equipment (for example, precision-guided weapons). Breaking out of such agreements requires the construction or rebuilding of whole weapons systems or units, and building modern weapons systems generally takes years. Breaking out of a force-structure measure, therefore, will likely take years.

Constraints fall between CSBMs and force-structure measures on the breakout spectrum. To move troops back into a formerly demilitarized zone, for example, is likely to take more time than expelling (or refusing entrance to) a group of observers, but less time than reconstituting units that have been disbanded. Limitations on operations that improve readiness, such as a limit on training or exercising troops at the divisional level or above, would require as long to break out of completing the relevant training—more than a few days, typically, but less than the years that may be necessary in the case of force-structure measures.

We can also use this breakout spectrum to identify the margins of constraints. The CSBMs of the Stockholm Document come fairly close to the left edge of constraints on the breakout spectrum, primarily because of their inspection and so-called constraining provisions.⁴ These CSBMs relate to operations but do not place much of a constraint upon them. Breaking out of notification requirements is relatively easy, for example, simply by failing to observe them. Although at least an implicit stricture exists in such measures against conducting stipulated exercises without the requisite notice, a violation cannot be confirmed completely unless and until a notifiable event occurs—that is, after the breakout has happened.

To the right of CSBMs on our spectrum lie constraints. Any constraint has three basic components: the *object or activity being regulated* (for example, tanks, or artillery and its ammunition, or divisional exercises); a *quantitative limit* on the deployment or activity of the regulated military units (for example, zero tanks, or ten rounds withdrawn per storage site per day, or two field training exercises per year); and the *zone* in which

⁴We do not consider the Stockholm Document's "constraining provisions" to be full-fledged constraints, even though they call for notification two years in advance of exercises that exceed 40,000–75,000 troops. Without such notification, an exercise at those levels is prohibited by the Stockholm Document; however, the document also provides exceptions for exercises, regardless of scale, conducted as "alerts." Despite this loophole, the close relationship of Stockholm's "constraining provisions" to constraints, both terminologically and substantively, is apparent.

the prohibition or limitation occurs (for example, within 100 kilometers of any border between a NATO and a Pact member state, or within the two Germanies and Czechoslovakia, or from the Atlantic to the Urals). Careful analysis must acknowledge all three aspects of constraints. A "thin-out" zone, for example, is an empty concept until one specifies that it comprises, say, a limit of five divisions for each alliance deployed in a zone of 50 kilometers on either side of the line of demarcation.⁵

One significant subcategory of constraints comprises measures that require *redeployments* of units or that separate crucial components of a unit (for example, ammunition stored some distance from the forces that would use them). Such redeployments and separations could take place either in relatively narrow or in very wide zones—a band of territory on both sides of the line of demarcation, for example, or central Europe as defined in the Mutual Balanced Force Reduction (MBFR) talks, or all of Europe from the Atlantic to the Urals. As a general rule, the larger the zone of application for deployment-oriented constraints, the longer breaking out of them will take. Breaking out of a tank-free zonal constraint 25 kilometers wide on each side of the line of demarcation should require approximately a day—some topping off of gas tanks, a short drive across the countryside, and some extra time for getting untangled from any traffic-control problems. In contrast, a tank- or ammunition-free zonal constraint covering all of Europe would entail an amount of breakout time that, although substantially less than necessary actually to rebuild units, could well stretch to months.

Some arms control possibilities include pulling forces out of the Atlantic-to-the-Urals zone but leaving them in the relevant nations force structure. Some analysts treat such measures as if they were reductions. In our view, such measures are not reductions, they are constraints—and the difference is more than merely one of terminology. A tank division removed from Germany and placed behind the Urals or across the Atlantic as a result of a constraint can return with the passage of several weeks' time and the expenditure of a few million dollars. A tank division removed by a genuine reductions measure—its equipment destroyed and its personnel demobilized—cannot return until many months have elapsed and billions of dollars have been expended.⁶

⁵ *Line of demarcation* here and later denotes the border between the Federal Republic of Germany (FRG) and both the German Democratic Republic and Czechoslovakia.

⁶ The distinction between reductions on the one hand and declaratory measures and CSBMs on the other is often expressed as a difference between "structural" and "operational" arms control. The understanding behind this distinction is that reductions directly affect military force "structure"—that is, the elements (units, equipment, personnel) that comprise it, while declaratory measures and CSBMs involve the "operations" of military forces—that is, what the

The other significant subcategory of constraints is the activity-oriented measure. Constraints focusing on the *deployment* of units are not intrinsically more worthwhile or effective than constraints focusing on the *activities* of units with unregulated deployments. Certain constraints in the latter category, such as a prohibition on training or exercising more than 100 men simultaneously, could well buy more time than certain deployment-oriented constraints, such as a 100-kilometer tank-free zone centered along the line of demarcation.⁷ Training units to undertake battalion-level warfare, and then regimental/brigade and divisional warfare, is a time-consuming—and probably essential—task for any army that hopes to launch a successful offensive. Rolling 50 kilometers toward a border with well-trained units may not be a trivial task, but it is a far simpler one.

The money that arms control could save can be placed on a simple linear scale in approximately the same order as in the breakout spectrum—though in this case the scale is in budgetary rather than temporal units, and we must also place the two subcategories of constraints separately on the spectrum (see Fig. 3). Declaratory measures and CSBMs are likely to provide minimal savings since they have a minimal effect on the production or operation of military units or their equipment. Indeed, such measures probably involve a net financial *loss* given that the requisite observers or communications links involved in monitoring them necessitate additional expenditures.

forces can do, regardless of how they are structured. Which of these two categories encompasses constraints is not always clear. Activity-oriented constraints (for example, limits on exercises) seem to fall squarely into the operational camp. However, deployment-oriented constraints—especially those involving wide-ranging zones from which specified elements of force structure are prohibited—tend to cause definitional problems. To refer to such constraints as structural arms control measures or reductions is tempting, particularly since they are likely to be negotiated only in the context of a broader, reductions-oriented arms control agreement. Edward Warner and David Ochmanek, for example, consider the removal of forces beyond the Atlantic or the Urals to be reductions. See their contribution, "Conventional Arms Reductions Approaches," in Robert D. Blackwill and F. Stephen Larrabee (eds.), *Conventional Arms Control and East-West Security*, Duke University Press, Durham, N.C., 1989, pp. 231–257.

⁷We frequently choose extreme examples, such as a prohibition on training more than 100 men simultaneously or a prohibition on moving forces more than 20 kilometers out of garrison, in order to emphasize the particular point at hand. We do not thereby endorse extreme measures as desirable—or even possible—outcomes.

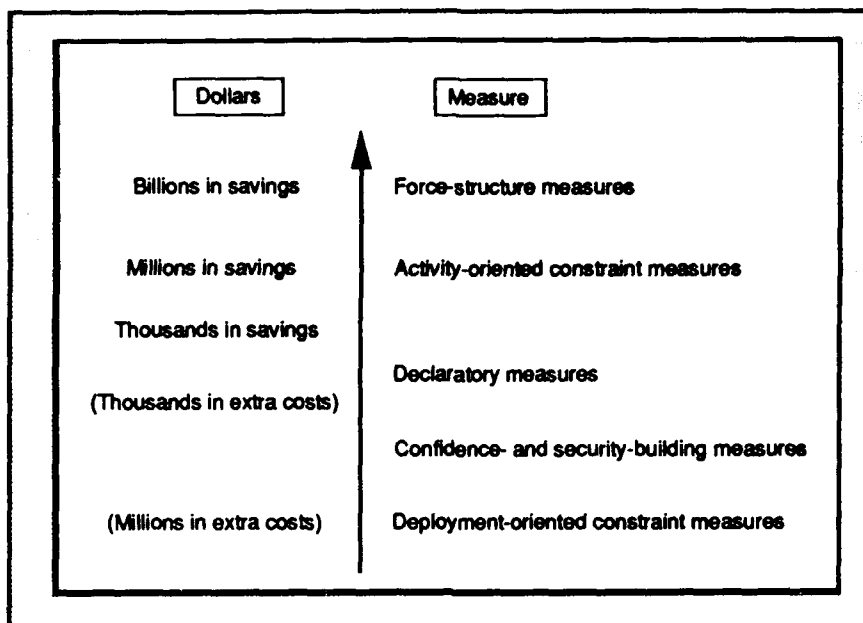


Fig. 3—The savings spectrum

Force-structure measures, in contrast, can save huge sums of money—indeed, complete disarmament would theoretically save the entire defense budget of each participant. The purchase and fielding of complete weapons systems typically runs in the multiple billions; thus, force-structure limits that eliminate even a small number of as yet unpurchased systems can save significant amounts of procurement and deployment costs. Force-structure reductions that destroy existing systems obviously do not save the procurement costs of weapons already built, but they do eliminate the operations and maintenance (O&M) expenditures otherwise necessary to keep such systems in existence. Such agreements as the ABM Treaty probably also saved sizable research and development costs (among other costs) during the 1970s by prohibiting systems that would otherwise have been at least tested and possibly even deployed.

As in the case of the breakout spectrum, activity-oriented constraints seem likely to fall toward the middle of the cost-savings spectrum. The O&M expenditures can be significant—indeed, in the U.S. defense budget, O&M outlays are approximately the same size as procurement outlays. Some of the more far-ranging constraints on training or exercises could involve significant cutbacks in operations, thereby producing significant savings. We cannot state with confidence, however, what proportion of O&M costs are necessary simply to keep an active unit in existence and what proportion are necessary to keep the unit finely honed. Constraints would presumably allow savings

only on the latter portion of expenditures, while force-structure measures can eliminate the need for O&M expenditures entirely by eliminating the unit that would otherwise need to be operated and maintained.

In contrast, deployment-oriented constraints (especially those involving permanent redeployments of large numbers of units) are likely to result in cost increases, not cost savings—especially in the short run. Such redeployments necessitate the construction of new infrastructure—bases, parts stockpiles, and ammunition depots—for displaced units, and such construction is typically expensive. In fact, large-scale redeployments would probably result in cost increases greater than those involved in building and maintaining the communications links or teams of observers associated with declaratory measures or CSBMs.⁸

WHAT CONSTRAINTS CAN AND CANNOT DO IN EUROPE

If we switch from the general perspective of arms controllers to the specific perspective of military planners with responsibility for operations in central Europe, we can redraw the “breakout spectrum” as an “attack options” or “warning time” spectrum (see Fig. 4). We use potential attacks by the Warsaw Pact on NATO for our examples.⁹

Depending upon the amount of warning time available to NATO, the Warsaw Pact can conceivably launch very different sorts of attacks upon NATO. At the left end of the options/warning spectrum lies an attack possibility that gives NATO very short warning of impending war. Such an attack might be launched by the forward-deployed units of the USSR in East Germany and Czechoslovakia, supplemented by whatever ready indigenous forces might exist in the German Democratic Republic, Czechoslovakia, and Poland; the attack would probably essentially be unreinforced by other forces during the first few weeks of war. This scenario, which is often referred to as the “standing-start” or “unreinforced” attack, will for our purposes be denominated a “first strategic wave” attack.

⁸Of course, some redeployments might generate political pressures for disbanding the redeployed units, as might be the case if U.S. Army units were redeployed out of the FRG. Unit deactivations obviously have the potential for large net savings.

⁹For additional data on the forces and the force ratios involved in the attack options we discuss here, see Richard Kugler, “The Military Balance in Europe,” in Blackwill and Larrabee (eds.), *Conventional Arms Control and East-West Security*, pp. 44–65. For three combat scenarios that appear to correspond to the first three attack options we discuss below, see Alexei Arbatov, Nikolai Kishilov, and Oleg Amirov, “The Military Balance in Europe,” in Blackwill and Larrabee (eds.), *Conventional Arms Control and East-West Security*, pp. 66–89.

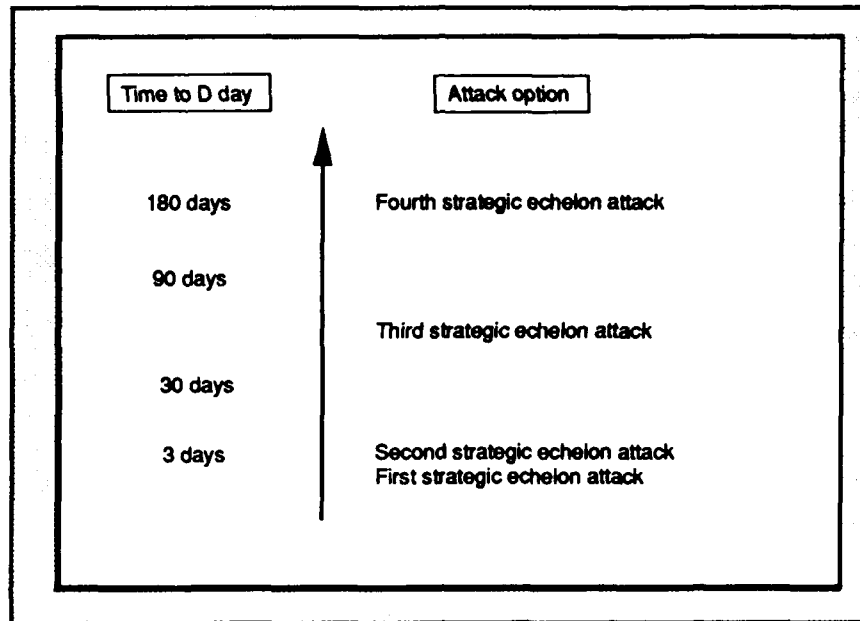


Fig. 4—The attack options spectrum (Pact attacks)

If the Pact is willing to risk providing NATO with a somewhat longer warning period,¹⁰ then the opening stages of a war could see the forward movement not only of the ready forces in East Germany, Czechoslovakia, and Poland, but also those from the western military districts of the Soviet Union. These additional units would spend the extra days (or possibly, weeks) of time available before the commencement of hostilities bringing themselves up to full readiness and preparing for redeployment to areas much closer to the line of demarcation. They might even commence such redeployment before the attack begins.¹¹ In any event, such forces would be available to serve as a “second strategic wave” for conducting or reinforcing the initial attack.

Another scenario, that would potentially provide NATO with even more warning time would be to bring to full readiness essentially all existing military units of the Warsaw Pact. To transform even a small number of the many Pact cadre units—typically armed with outmoded or ill-maintained equipment and, by definition, undermanned—into

¹⁰Note that from the perspective of a conservative Pact military planner, the maximum possible warning time is always relevant. Even if NATO might not *necessarily* detect a violation or respond to that violation, NATO *might* nonetheless detect a violation and *might* respond immediately; hence, the conservative planner will treat such a possibility seriously to ensure that his plans are robust across a variety of hypotheses concerning the adversary's behavior.

¹¹Such a reinforced attack could also be accompanied by a very short warning if the USSR were confident that it could conceal or delay preparations necessary to ready and position its rear-area units for reinforcement.

full-fledged combat units would doubtless take a good deal of time, probably on the order of several months. Such an effort would provide the Soviets with what we might call a "third strategic wave" that could be brought to bear against NATO. In exchange, NATO would gain—at least potentially—substantially longer warning of the impending conflict than it would receive of first or second strategic wave attacks.

Even further to the right on our options spectrum would lie attack possibilities in which the USSR and other members of the Pact were also able to raise completely new units from scratch before beginning any onslaught. If historical experience is any guide to estimating the lead time necessary for such an operation, the Pact would potentially provide NATO with at least six months' warning time before these new "fourth strategic wave" units were ready to attack across the West German border.

The additional warning time that constraints can provide to NATO defenders varies substantially depending upon which of these various types of attack the Pact chooses to launch. We believe that constraints will buy relatively more useful warning time with respect to first and second strategic wave attacks than for third and fourth strategic wave attacks.

The reasons for this are fairly simple. The time lines for third and fourth strategic wave attacks include at their outset many activities that only force-structure measures, not constraints, can effectively limit: the construction of brand-new units (in the case of fourth strategic wave attacks) or the wholesale addition of personnel to existing but threadbare division flags (in the case of third strategic wave attacks). In the case of first and second strategic wave attacks, the attacker need only hone the men and equipment already in active military service and move them rapidly to the front line; these are the same areas of readiness and deployment on which constraints focus. Operational activities of the kind that constraints can potentially regulate are most directly associated with preparations for attacks by high-readiness forces; the third and fourth strategic waves are low-readiness forces first brought to reasonable readiness by changes in force structure, not by a change in operations.

Of course, constraints may have some use in third or fourth strategic wave attacks. The final preparations for a third or fourth strategic wave attack are similar to the initial preparations for a first or second strategic wave attack—movement toward the border by forces far from the border, a burst of increased training by relatively ready units, and so on. If the defending side completely misses the warning signs unique to a third or fourth strategic wave buildup, the defender may still obtain some benefit from seeing the

attacker violate existing constraints.¹² The defender would also benefit if the attacker chose to launch a "constrained" attack—that is, one that complied with the constraints up to the last minute and thus sacrificed optimal attack capabilities in the hope of minimizing warning time.¹³

To summarize, constraints can therefore buy hours, days, or even weeks of useful warning, but not months. They can alleviate problems associated with short-warning attacks. They can reduce the likelihood that first and second strategic wave attacks will succeed by depriving an attacker of the opportunity to make undetected preparations for such an attack. They cannot deter an attacker who believes that he can, *even if observed*, generate forces rapidly enough in comparison to the defender to launch a successful offensive. Force-structure measures are the only way to transform such a situation into one in which the would-be attacker faces significantly reduced incentives to attack.

But if constraints can tip the balance such that what once would have been an unconstrained or surprise attack with a reasonable chance of success becomes a constrained or nonsurprise attack with little chance of success, then constraints will obviously have made a very useful contribution—not a guarantee of peace in our time, but a useful contribution. In such circumstances, the would-be attacker is driven toward adopting a third or fourth strategic wave attack option. The additional warning time potentially available from constraints might prove sufficient for the defending side to construct a robust defense, or for political negotiations between the alliances to stop a crisis from becoming a war, or for the more cautious members of an alliance to prevail upon their less cautious members and put off the attack entirely.

¹²In light of the disparities in effective force ratios likely to exist if only one side has brought to full readiness its third or fourth strategic wave, the role of constraints would service approximately the same function as someone yelling "Look out!" to a person standing on the beach as a 50-foot tidal wave begins to break.

¹³Manfred Mueller has proposed limitations on peacetime force mobilization. See his "Constraints" in Blackwill and Larrabee (eds.), *Conventional Arms Control and East-West Security*, pp. 405-421.

III. CRITERIA FOR EVALUATING CONSTRAINT MEASURES

Having explored the general position of constraints in the field of conventional arms control and having specified the particular sorts of attacks against which they are potentially useful, we must still posit, develop, and examine three criteria for evaluating any constraint the preceding analysis suggests. These criteria are defensive asymmetry, clarity, and economy. Time and resource limitations do not allow us to apply each criterion systematically to all constraint proposals made to date. Instead, we have concentrated here on creating a framework to assist those who must evaluate the desirability of actually negotiating and implementing the various constraint proposals.

DEFENSIVE ASYMMETRY

By *defensive asymmetry* we mean the degree to which a measure, if adhered to by both sides, increases the likelihood of successful defense. To conceive of measures that hinder the attacker's operations is relatively easy, but we must also ensure that the defender's operations are not equally hindered. The ideal defensively asymmetrical measure would greatly hinder offensive operations by either alliance without hindering defensive operations at all.¹

A defensively asymmetrical constraint should contribute to the stability of the military situation in central Europe, much as a measure on strategic nuclear systems that encouraged the substitution of second-strike weapons for first-strike systems might contribute to military stability between the United States and the Soviet Union. By *stability*, after all, we typically mean "a lack of incentives to begin a war." The attacker is whom we can expect to decide whether to go to war. A measure that decreases the attacker's chances of succeeding on the offensive more than it decreases the defender's chance of successful defense should obviously lessen the attacker's incentives to go to war.

As in the case of force-structure measures, the elements of interest are those that emphasize mobility and the ability to seize and hold territory. In modern warfare, the

¹In *Toward a Conceptual Framework for Operational Arms Control in Europe's Central Region*, The RAND Corporation, R-3704-USDP, 1989, Paul K. Davis analyzes NATO's objectives and concludes that enabling the defending side to defend successfully is—or should be—the primary Western goal. Analysis by representatives of Warsaw Pact nations appears to agree on the need to accord primacy to measures that disproportionately favor the defender. See Mueller, "Constraints," in Blackwill and Larrabee (eds.), *Conventional Arms Control and East-West Security*, pp. 405–421

need for a combined arms approach to the offensive demands an intricate combination of weapons systems. Combat systems that can seize and hold ground—especially the mobile, armored, high-firepower tank—are critical to the mixture. Combat-support weapons such as artillery, infantry fighting vehicles, attack helicopters, and aircraft are also crucial. And even combat service support systems, such as tank transporters or bridging equipment, will be an important part of any successful modern offensive. Constraints affecting these systems, therefore, seem potentially promising.²

Although one might be tempted to lessen these incentives simply by hampering the attacker, our asymmetry criterion requires measures that hamper the attacker *more than the defender*. This requirement complicates the evaluation of constraint measures. First, since the defender will need to make use of virtually all the same weapons systems as the attacker, much more work needs to be done to determine which current systems help the attacker more than they help the defender.³ NATO, for example, may decide to focus in its structural arms control efforts upon tanks and artillery, among other things. A model of warfare in which tanks and artillery are crucial weapons for the attacker accords with one very important historical example: the offensives of the Red Army against the German armies in 1944–1945. However, such a model is inconsistent—or at least incomplete—with respect to several other historical examples. The offensives of the Western Allies against the Germans in 1944–1945 employed tanks and aircraft as their crucial components, as have the more recent examples of Israeli offensives in the Middle East. The most recent engagements of the superpowers themselves have established a crucial role for helicopters, though the terrain and technological sophistication of their opponents in Vietnam and Afghanistan were clearly quite different from those in central

² Weather is not a weapons system, but may nonetheless affect the offensive-defensive balance. Dense fog, for example, may hamper the defender more than the attacker; cold that is extreme enough to hamper the mobility of men or machines may hurt the attacker, who must typically move to the attack, more than it hurts the defender. The two sides may not be able to do anything about the weather, but they can talk about it—perhaps enough to adopt constraints that discourage attacks during months in Europe that typically have good weather for the attacker. Such constraints might include prohibiting large-scale exercises or troop rotations during those months.

³ We are well aware that some future set of weapons systems might be readily distinguishable as more useful to the defender than to the attacker, or at least be an integral part of defense rather than of offense. Arms control agreements could even help bring clearly distinguishable defensive doctrines and weapons systems into existence. Such weapons are not on the drawing board, however, and such doctrines exist only in the pages of scholarly journals—not in the minds of most military officers. Constraints that encourage the development of such systems are to be welcomed, but constraints negotiated in the next decade will at the very least need to account for the current configuration of forces and weapons systems.

Europe. Determining just which weapons systems are disproportionately "offensive," therefore, is far from a simple matter.⁴

Second, that tactical (and probably operational) offensives are necessary for the strategic defensive side's success is clear. A complete inability to counterattack would mean that the front would move only in one direction—the direction in which the attacker began an offensive. And without a revolution in military doctrine, counteroffensives at the operational level are likely to be necessary if the defender is ever to regain the initiative and restore its prewar borders.⁵ Therefore, measures designed to constrain "offensive" weapons systems—especially measures affecting systems necessary for an effective strategic defense—should be examined for their effects at all levels.

Let us take one example of the difficulties involved in deciding which measures are defensively asymmetrical: a relatively narrow "demilitarized" or "tank-free" zone straddling the line of demarcation. In NATO's case, the strategy of forward defense may be deeply entrenched politically, but no deep entrenchments exist along the line of demarcation. If the movement of military units across equal distances (we discuss below the possibility of zones involving unequal distances) is likely to take the forces of each side an approximately equal amount of time, then NATO and Pact forces breaking such a constraint simultaneously would arrive at the unfortified border more or less simultaneously.⁶ The defending forces, however, would be without the benefit of extensive defensive preparations on their own terrain. In addition, the attacker knows beforehand where he will attack and can therefore focus his efforts on moving troops forward into those crucial areas; the defender has no such advantage and may therefore be relatively less well prepared in the area of the attack's main thrust(s). Tank-free zones or

⁴Indeed, if we look back to the most recent stage of warfare in which offensive action was truly impracticable, we must return to the middle stages of World War I. To turn the clock back to those years would require abolishing not only the tank and the airplane, but also the helicopter and any armored vehicles. The machine gun and the shovel would presumably be retained; the role of artillery is unclear. Even in this environment, the Germans attained significant offensive successes later in the war with infantry units emphasizing infiltration tactics (though artillery also had a role to play). Our RAND colleague Kenneth Watman was especially helpful in clarifying our thoughts on this point.

⁵Again, we are aware that such a revolution has been proposed under the rubric of "defensive defense." A revolution along these lines would require the destruction of vast numbers of current weapons systems, however, and probably also the reeducation of thousands of military minds. In this study we focus on more immediately attainable possibilities.

⁶This is presumably the best a defender could hope to do, *unless* the attacker were clumsy enough to reveal his intentions prematurely and the defender were confident enough to race preemptively to the border.

zones of military disengagement in which military movements or maneuvers might be prohibited could thus make matters worse for the defender, not better.

The search for defensively asymmetrical constraints is further complicated by the substantial numerical asymmetry that NATO suffers in at least some crucial weapons systems and unit deployments. If, as many analysts believe, NATO currently walks a thin line in its ability simply to cover the front with a cohesive defense, then small changes in the overall balance could greatly affect the outcome of combat in central Europe.⁷ In these circumstances, that the question of attacker-defender asymmetry can easily become entangled with measures seeking to reduce the overall Pact-NATO asymmetry should not be surprising. Issues of what we might call "alliance asymmetry" may be quite relevant to the intellectually purer "defensive asymmetry" criterion: If a particular constraint causes NATO to fall off its defensive thin line without significantly affecting the Pact's offensive capabilities, then small changes in the relative balance of NATO and the Pact can lead to large changes in the incentives for one side to go to war.

Finally, we should be careful about constraints that clearly have destabilizing aspects. If ammunition is located in centralized areas, for example, the side that strikes first might be able to destroy huge quantities of enemy ammunition while expending very small quantities of its own weaponry. Constraints that encourage such preemptive action should be examined with special care before they are proposed.

Is there any hope for concocting a set of constraints that does meet the asymmetry criterion? Without firm convictions about which weapons systems are disproportionately useful to the attacker, one is more or less limited to two approaches. One can implement constraints that prevent the *concentration of forces* that an attacker requires in the initial stages of an attack (but that a defender cannot risk, because of ignorance of enemy plans, until the attack has progressed significantly). Alternatively, one can wrest from the Pact an acknowledgment that its forces are *more offensive* than NATO's and then implement constraints that asymmetrically affect the Pact's forces.

Constraints that limit the concentration of forces by an attacker rest on two premises: (1) that the attacker will have to move substantial forces a significant distance forward before launching an attack across the border, and (2) that the attacker will not be able to obtain a sufficient force ratio for success by evenly spreading his forces along that

⁷For an example of such an argument, see Kugler, "The Military Balance in Europe," in Blackwill and Larrabee (eds.), *Conventional Arms Control and East-West Security*, pp. 44-65.

front line once they arrive. If these premises are correct, then the attacker must concentrate his forces for success.

One could implement a constraint on force concentration by agreeing upon peacetime deployments for each side's units and prohibiting their movement from those deployment areas by more than a certain amount.⁸ If this "radius of free movement" is smaller than the distance a particular unit must travel to reach the border, then the concentration of that unit near the border is effectively prohibited. Using current peacetime deployments for units between the Atlantic and the Urals but granting them only a very small radius of free movement—say, 20 kilometers—would make an offensive difficult to launch without violating the constraint early on, given that most units of both sides are deployed significantly more than 20 kilometers from the line of demarcation. As another example, one might prohibit any movement beyond current deployment areas that exceeded specified levels of activity (for example, three divisions "out of garrison" at any one time).

One might also implement a constraint that focuses on prohibiting the concentration of forces near the border by setting up "crisis deployment zones" for units within a few dozen kilometers of the border (even for units with peacetime deployments far from the border), but setting very small radii of free movement. Both sides could then deploy their units for defense but could not move toward the border without violating the constraint. To the extent that measures taken by units in place—such as preplotting zones of fire, familiarization with terrain, and emplacement of barriers—favor the defender and are available to these forward-deployed units, this arrangement would further improve the defender's prospects at the expense of the attacker's.

This latter constraint points out the importance of force-structure considerations even when one is considering constraints. If the above measure were to be implemented without any change in the existing force structure, and all units in the force structure were given crisis deployment zones near the border, NATO would not be at all happy with one possible result: the Warsaw Pact could deploy *all* of its units in Europe fairly near the border *and* point to its legal right to do so under the constraints measure. And if the Pact truly fears a NATO offensive, then the Pact would be equally unhappy with the movement forward of all NATO forces. As we have said before, the existing force

⁸Such an agreement would need to allow for routine rotation of troops and for their movement to training areas

structure may remain a problem even in the presence of a rigorous set of constraint measures.

Note that constraints can nonetheless be pressed into service as partial substitutes for force-structure reductions. Suppose the two sides could agree on a force structure, different from the current one, that made each side confident its opponent could not launch a successful offensive. Even in the absence of an agreement to destroy all "offensive" units, one could give those units peacetime and crisis deployment zones far from the border. This would make both sides happier than they would be without such constraints. Unfortunately, the breakout time for such an agreement—the time it took to redeploy the specified units to the border—would still remain uncomfortably short.

Another avenue of approach to obtaining constraints that meet the asymmetry criterion is to adopt constraints that asymmetrically affect the Warsaw Pact. The profitability of this approach depends upon two assumptions. The first is that the Warsaw Pact is the more offensively oriented alliance. This argument can be supported on several grounds: the Pact's doctrine has relentlessly emphasized the offensive until very recent times; Gorbachev's statements about "sufficiency" and the need to save money on armaments have yet to yield any irreversible impact on Soviet production or deployments; the Pact currently has a significant numerical superiority in weapons systems such as tanks, artillery, and aircraft; NATO is incapable of offensive action because of the defensive nature of its coalition, the inherent reluctances of its members, and, again, the numerical inferiority of its forces, which becomes even more obvious when measured against the higher force ratios necessary to conduct successful offensives.⁹ If one accepts this argument and assumes that the Pact is the more offensively oriented of the two alliances, then limits that asymmetrically affect the Pact will asymmetrically affect the most likely potential attacker, thus fulfilling the defensive asymmetry criterion.

The second assumption necessary to justify much expenditure of effort on constraints with asymmetrical effects upon the Pact is that they are, or can become, "negotiable." Whether the Soviets would accept such constraints depends upon a host of factors: why they accepted the intermediate-range nuclear force (INF) agreements, why Gorbachev has announced his unilateral reductions in Pact forces and how he intends to implement them, how far to take Gorbachev's expressed willingness to reduce to parity

⁹See Kugler, "The Military Balance in Europe," in Blackwill and Larrabee (eds.), *Conventional Arms Control and East-West Security*, pp. 44-65.

various categories of Pact (or NATO) conventional force superiority, whether asymmetrical effects can be justified on the basis of other asymmetries (such as the Pact's greater strategic depth), the future strength of Gorbachev's position generally and vis-à-vis the military specifically, and so on. For the sake of discussion, we will assume here both that the Pact is more offensively oriented than NATO and that the Pact will accept constraints that asymmetrically affect it more than NATO.

A wide variety of constraints could then plausibly meet the defensive asymmetry criterion. Constraints could either asymmetrically affect the Pact on the surface or be equally applicable to both parties but negotiated in such a way that their effect weighs much more heavily on the Pact. In the first case, constraints could include asymmetries in the weapons or units to which the constraint applies, or in the depth of the zones, or in the frequency of permissible exercises. Suppose, for example, that all NATO forces were excluded from the 50 kilometers west of the line of demarcation and the Pact's forces were excluded from the first 150 kilometers east of the line of demarcation; or that all Pact units were excluded from the 50 kilometers east of the line of demarcation but only NATO tanks were excluded from the 50 kilometers west of the line of demarcation; or that the Pact could conduct no exercise of more than 15,000 troops (or approximately one division) and NATO could exercise no more than 90,000 troops (or approximately five divisions).

Instead of constraints with obviously asymmetrical provisions, one could implement constraints that on the surface appear to apply evenhandedly to the two alliances but, because of asymmetries inherent in the two alliances' current forces, affect the Pact's operational capabilities more than NATO's. Suppose each side could annually expend only 1000 live rounds of tank ammunition in the area between the Atlantic and the Urals.¹⁰ Because the Pact has so many more tanks, the proportion of its tank forces that would be trained and experienced in firing live tank rounds would be much smaller; thus, the relative readiness of forces likely to engage in European tank combat would improve in NATO's favor. A similar argument might apply to relatively low, symmetrical ceilings on exercises: The Pact has many more weapons systems and troops to exercise, and a low, equal ceiling would thus leave the Pact with a much smaller

¹⁰Here as elsewhere in discussing potential constraint measures, we assume that they can effectively be verified. We discuss verification requirements below under the criterion of clarity.

proportion of its forces trained and ready (or in place to attack, if an exercise were used to mask an actual attack) than NATO's.¹¹

One might also simply freeze training and readiness at their current levels (if one could define and mutually agree on what was meant by *training* and *readiness*). At present, NATO's units may be better trained and more ready, on a unit by unit basis, than their counterparts in the Warsaw Pact. A freeze at current levels of training and readiness, therefore, would preserve a NATO advantage, if such a constraint were adhered to, or would provide warning if the Pact violated the constraint in order to bring its forces to a level of readiness comparable to NATO's.¹²

Some constraints, however, could apply evenhandedly to both alliances but hinder NATO more than the Pact because of existing asymmetries. Such measures might include, for example, proposals for banning maneuvers that exceed specified levels of troops or that take place in close proximity to one another. In deference to agricultural requirements in Western Europe, NATO can only conduct significant field exercises from late autumn to early spring. It currently holds exercises that are larger, closer together in space and in time of year, and fewer in number than those of the Warsaw Pact. Although appearing to apply evenhandedly to both sides, therefore, such proposals could in fact affect NATO's defensive capabilities more adversely than they do the Warsaw Pact's. Alternatively, constraints on air training that are symmetrical on their face might harm NATO's capabilities more than the Pact's if NATO relies more extensively on aerial operations or conducts much more realistic aerial training. (Training asymmetries, both on the ground and in the air, may be diminishing, however, because of economic and political pressures on both sides.)

Defensively asymmetrical measures ensure that an attacker who obeys such constraints suffers a significant penalty relative to the defender. As discussed above, however, arms control measures are not sacred, and even if they were, an aggressor is frequently willing to be profane. Thus, good constraint would ensure that an attacker not only suffers a significant penalty for adhering to a constraint, but also for violating it. To impose that penalty, we turn to our second criterion, clarity.

¹¹We must qualify this statement with the acknowledgment that the attacker can choose not only the time and place of attack but also his attacking forces and, to some extent, the defending forces. The Pact could therefore attack with its most ready or best-trained forces against NATO forces that were trained poorly (or, if NATO distributed its training equally, trained exactly to the uniformly average level).

¹²For discussion of training and readiness issues in this context, see Davis, *Toward a Conceptual Framework*.

CLARITY

As discussed at some length above, an important yardstick by which to judge an arms control measure is what happens when it is broken, not simply what happens when it is adhered to scrupulously. This is especially true with constraints, since the forces themselves remain in existence in the absence of force reductions. As we use it here, the term *clarity* means the degree to which one alliance's breaking of a constraint inevitably provides meaningful warning to the other alliance. Clarity goes beyond verifiability to include both the significance of the breach and the likelihood of a response to that breach.

Clarity has political and military aspects. What we call the "political" aspects of clarity include the precision with which legal and illegal actions are *identified* in an arms control agreement—the drafting skills of negotiators bent on reducing ambiguities, in essence—and the unanimity with which members *within* an alliance can agree that violations of those measures should greatly increase the likelihood of concrete *responses*. A well-drafted agreement that clearly sets forth the regulated or prohibited activities, and into which the nations of both alliances solemnly enter, can contribute to both identification and response.

Suppose, for example, the Soviets were to announce today that in 1992, they were going to stage a field exercise involving all the group of Soviet forces in Germany as a celebration of the 75th year of Marxism-Leninism in the Soviet Union. Contrast this situation with one in which an agreed-upon constraint exists that prohibits any field exercises involving more than 50,000 troops within the two Germanies and Czechoslovakia. Although in both cases the military significance of the Soviet action would be the same—a very large number of highly ready troops exercising within a relatively short march of the West German border—the political significance is likely to be quite different. In both cases, to be sure, arguments about whether the Soviets were really up to something sinister would occur. But under an arms control regime in which constraints clearly prohibit such large-scale exercises, the boundaries of the discussion would be much narrower and the issues more clearly presented. "Why are the Soviets doing this illegal thing?" is likely to be a question with much more power to sharpen and focus the debate than questions like "What is it that the Soviets are doing?" and "What are all the reasons why they might do such a thing that is perfectly within their rights to do?" The clear violation of a legally agreed-upon constraint speaks volumes about the intentions of the violating party and thus, if nothing else, encourages a response from the other party to the agreement.

We should therefore remember that an agreement between NATO and the Warsaw Pact that simply ratifies the status quo can be useful, especially in tandem with an agreement about what changes in that status quo would violate the substance of an accord about constraints. A clear, comprehensive agreement between the two alliances that sets forth their force levels, deployments, and exercise patterns would go a long way toward clarifying future situations in which a violation is alleged.

The related topic of verifiability is another important aspect of political clarity. If we pick constraints that are easy to verify regardless of the verification regime employed, then we have improved verifiability, and thus the clarity with which one side or the other can make its accusations and decisions at the political level. Some types of constraints are likely to be inherently easier to verify, regardless of the verification regime employed. An absolute prohibition on an activity is typically easier to verify than a numerical limit on that activity. A small zone in which an activity is prohibited permits the concentration of verification assets in or upon that zone, other things being equal, and thus is easier to verify than a large zone, regardless of the particular verification regime.

Some verification regimes are also likely to be better at verifying constraints, regardless of the type of constraint. Extensive on-site observation, numerous on-demand inspections, and specified entry/exit "portals" into regulated zones are all likely to make a contribution to verification beyond that made by national technical means, and to make that extra contribution by helping to verify a host of different measures. In the process, they should also improve the likelihood that the violation of a constraint measure will be detected and will prompt a concrete response.

The clarity issue has military as well as political aspects. *Different military* activities furnish different degrees of clarity in their indication of a decision to undertake offensive activity. Field exercises of offensive activities at the army or army group level, for example, are obviously clearer indications of military intent than small-unit training to repulse armored attacks. Activities that are crucial in the transformation of military forces from peacetime units to wartime attackers should be singled out—indeed, in the case of national and alliance-wide construction of intelligence-and-warning indicators, they have presumably already been identified—and the most crucial such activities should, all other things being equal, be at the top of a basic checklist that could provide candidates for regulation with constraints.

ECONOMY

Another aspect of the desirability of any constraint measure should be its effect on the military budgets of the nations in NATO and the Warsaw Pact. At a time of significant, though quite different, difficulties that NATO and the Pact are likely to have in maintaining current levels of military expenditures, budgetary savings are an important potential contribution of constraints. Moreover, in contrast to the defensive asymmetry criterion—which requires one to estimate the outcome of a hypothetical war between forces that have not faced anyone in anger for decades and that use weapons systems rarely fired outside laboratories or test ranges—the two alliances have relatively firm data on how much their own weapons systems, training programs, and field exercises cost.

Constraints on training and on exercises are likely to result in some direct cost savings. Fewer exercises should result in lower expenditures on exercises. A similar situation may exist with respect to any constraints on readiness at the unit-training level. Note, however, that if expensive advanced computer simulators are employed extensively as substitutes for constrained activities, then the resulting situation could conceivably result in higher, not lower, training costs. Similarly, if separating weapons from their ammunition leads to more expenditures on ammunition transports, or if a prohibition on bridging equipment leads to greater submersibility for new tanks, the costs of fielding a constrained force could be more, not less, than that of an unconstrained force.¹³

Constraints on deployments of particular units or weapons systems will have a more complicated effect. Redeployments of stationed forces from their current locations to their homelands will likely result in significant capital expenditures for new basing facilities. Whether operating expenses for forces based at home are less than those for forces based abroad depends on numerous factors—exchange rates, offset payments, host nation support, and so on—we do not examine here. We hazard no guess, therefore, as to whether constraints requiring homeland redeployment of forces currently stationed abroad would result in significant savings.¹⁴

Depending on the particular constraints adopted, some savings may also result from decreased maintenance or procurement costs. If, for example, tracked armored

¹³The United States' POMCUS (prepositioned overseas material configured in unit sets) units are an extreme example of the potential costs of separating unit components: The personnel component of the POMCUS units is so far from their equipment that *two* sets of equipment are needed—one for training in the United States and one for storage overseas for use in combat.

¹⁴If redeployments generate sufficient pressure to result in the disbanding of the affected units, however, then obviously a net cost savings results.

vehicles were prohibited within 100 kilometers of the line of demarcation, scout units might eventually be converted to soft-skinned, wheeled vehicles at some savings. More optimistically, one might hope that constraints on military forces might be so effective in reducing political tensions that the felt need for military forces in general would decrease, and, with it, the need for so many expensive military forces in central Europe. Note, however, that large reductions in maintenance or procurement expenses are in general much more likely to come from force-structure measures, which eliminate forces directly, than from constraints, which merely limit their activities or deployments.

Note too that the expense of verifying constraints could be significant. A wide range of activities undertaken by a vast complex of forces are candidates for constraints. In many cases, the activities regulated have relatively unobtrusive signatures, especially in the case of widely dispersed support activities such as the loading of ammunition or the storage of refined petroleum products. Thus, the procedures adopted to verify constraints may need to be extensive and intrusive—and therefore, expensive.

IV. CONCLUSION

Our three criteria for evaluating constraint measures are not entirely new. Indeed, Thomas Schelling and Morton Halperin long ago set forth three criteria for arms control measures—criteria that have both continuing relevance and some correspondence to our own. Schelling and Halperin's criteria are a reduction in the probability of war occurring, a reduction in the destructiveness of wars that do occur, and a reduction in military expenditures.¹ Our economy criterion clearly corresponds to this last criterion, and rightly so. An awareness of the budgetary benefits of arms control has been low on many lists for many years. However, both the current possibilities for reducing or otherwise limiting conventional forces and the economic challenges facing the two alliances provide an excellent opportunity to reintroduce the goal of frugality.

When considered together, our asymmetry and clarity criteria come close to corresponding to Schelling and Halperin's emphasis on arms control's potential contribution to reducing the *likelihood* and *destructiveness* of war. Taken together, the asymmetry and clarity objectives, if fulfilled, tend to force a would-be attacker to choose between one of two unattractive options: adhering to constraints and launching an attack under conditions that favor the defender, or breaking the constraints and launching an attack that provides the defender with a much clearer or more timely warning. The likelihood of war in a world of asymmetrical and clear constraints presumably decreases as the attacker's chances of success diminish. And if an initially constrained attacker chooses to go to war, the resulting operational disadvantages of that attacker, or the defender's better preparedness, may well reduce the destruction that the attack can wreak.

What is new here is the application of such criteria to the particular area of constraint measures. For some time, constraints have occupied the uncomfortable middle ground between Stockholm-type CSBMs and large-scale force-structure limits or reductions. Policymakers and analysts have lacked a clear understanding of both the distinctive possibilities and the particular shortcomings that constraint measures, as a

¹Thomas C. Schelling and Morton H. Halperin, *Strategy and Arms Control*, New York: 20th Century Fund, 1961, p. 2. With the second criterion, Schelling and Halperin were interested in using arms control to limit intrawar escalation. We have no such hopes for constraints, but, as discussed below, we believe that constraints that fulfill our criteria can make a contribution to the more general principle of limiting destruction if a war starts. See also Dean, "Negotiated Force Reductions," p. 74, in which he argues that the general Western objectives for conventional arms reductions and constraints should be to decrease the potential to attack with minimum warning and to reduce the likelihood of inadvertent escalation to (or within) conflict.

class, might entail. In addition, many in the military seem more vehemently opposed to constraints on their operations than they are opposed to measures regulating force structure: We will let you take away our instruments of war, they seem to say, but do not tell us how to use the ones we have left.

Caution in proceeding with constraints is in fact warranted. They are a relatively new phenomenon in the world of conventional arms control, and an especially complex one. What sorts of weapons, deployments, or activities are actually offensive? How much training is sufficient for the defender, and how does one regulate training in any case? Can measures governing the operations or deployments of thousands of personnel and weapons be verified? What operations are most clearly "provocations" in the political sense? These are all difficult questions, and they are all being explored in the context of conventional arms control for the first time—or at least for the first time in a long time. Moreover, the complex force structures and other machinery of each alliance—and the even greater complexity of NATO–Warsaw Pact interactions, whether in war or in peace—often seem to be at issue in their entirety as soon as one begins to push very hard in attempting to discover the effects of any specific constraint.

Finding constraints that satisfy all three of our criteria, therefore, is not an easy task. Limits on exercises—or, put more technically, on activities conducted by units beyond a certain radius of their normal peacetime locations (for example, the radius of their garrisons, in the extreme case)—look promising. So do constraints on where, when, and how often such activities can take place. *Such measures could pass the economy test with ease and (as experience with the Stockholm CSBMs suggests) the clarity test eventually.* Whether they can ultimately satisfy the asymmetry criterion is the key question. Highly asymmetrical constraints on Warsaw Pact exercises, other training and readiness activities, and deployments are possible, as suggested above; whether all or even some of these constraints are negotiable is another matter. Perhaps the time will come when such problems will be easier to solve because we have expanded our thinking beyond constraint measures by themselves and begun planning how best to incorporate them in wider-ranging arms control agreements. Such agreements could conceivably address the problem of defensive asymmetry more broadly, through an interaction of force-structure measures and constraints.

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This study focuses on one aspect of potential arms control agreements involving conventional military forces: the use of constraints, defined as measures directly limiting or prohibiting current or future operations by military forces. The authors focus on constraints involving the conventional forces of the Warsaw Pact and NATO. Constraints may save money for all parties involved in a conventional arms control agreement. In addition, constraints have the potential to reduce the incentives for attack by increasing the amount and quality of warning time available to the defending side or by forcing an attacker to launch a constrained offensive. The authors develop, and apply with hypothetical examples, three criteria (defensive asymmetry, clarity, and economy) for determining whether a particular constraint is a good idea. Because of the difficulties of determining when constraint measures actually constrain an attacker's operations more extensively than a defender's operations, the nations of NATO and the Warsaw Pact should approach constraint measures cautiously lest they reach an agreement that reduces the prospects of a successful defense against large-scale offensives.