1-1-1962

Arms inspection

Lawrence S. Finkelstein

arms inspection

Lawrence S. Finkelstein

NOVEMBER 1962

№ 540

International Conciliation

CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE

The Carnegie Endowment for International Peace was established in 1910 to seek practical paths to peace. Income from the original endowment has been devoted to research and education in this field, including an active program of publications. In this connection, the Endowment assumes full responsibility for its decision to publish or sponsor the publication of works that appear with its imprint. However, the decision to publish a work does not necessarily imply endorsement of statements of fact or opinion that appear in it.

INTERNATIONAL CONCILIATION

The purpose of INTERNATIONAL CONCILIATION is to present to its readers factual statements and analyses of problems in the field of international organization. Each issue is devoted to a single topic, and is written by a specialist in that field. Material in this publication may be freely quoted or reprinted provided appropriate acknowledgement is given to INTERNATIONAL CONCILIATION.

INTERNATIONAL CONCILIATION is published five times a year (September, November, January, March, May) by the Carnegie Endowment for International Peace. Editorial and general offices: United Nations Plaza at 46th Street, New York 17, New York. European Centre: 172, route de Ferney, Grand-Saconnex, Geneva, Switzerland.

Subscriptions should be sent to the Carnegie Endowment New York Office or to Dotation Carnegie, 172, route de Ferney, Grand-Saconnex, Geneva, Switzerland. Effective January 1, 1963, annual rate—$2.25; two years—$3.75; three years—$5.00. Regular issues, 50 cents each; General Assembly issue, $1.00. Orders for single and bulk copies should be sent to Taplinger Publishing Co., Inc., 119 West 57 St., New York 19, N.Y. Reentered as second-class matter November 2, 1953 at the Post Office at New York, N.Y., under Act of March 3, 1879.

Advance Printing Co., Inc.

ARMS INSPECTION

Since 1945 hostile great powers have been engaged in a minuet over disarmament—advancing and retreating but never meeting. Central to their division has been the issue of inspection—on one side, "no more control than there is disarmament"; on the other, "no more disarmament than there is control." Slogans in turn have led to oversimplification. Inspection is this or that, good or bad, necessary or unnecessary.

The present article brings together for the first time the scattered thoughts of scholars and experts on this complex and little-understood issue. It probes beneath the surface to explore such questions as: the functions of inspection, the relationship of various types of inspection to the objects being inspected, and the obsolescence of inspection arrangements under the impact of technological change.

Inspection, the author points out, serves multiple purposes. It is a means of detecting violations of an agreement, thus giving the victim an opportunity to seek redress. The threat of detection and of consequent reprisals serves to deter violators. If adequately devised, inspection can provide reassurance that "all is well in the inspection system." Optimally, it can foster a climate of confidence that reduces tensions. A given inspection system may serve all or only some of these purposes. How many it serves is likely to be a compromise between conflicting objectives. The goal of perfection, however desirable, is surely unobtainable. Are the consequences that flow from no agreement more or less adverse than from an imperfect system? What are the political as well as the security implications? Realistic appraisals involve a complex balance sheet of gains and losses.

The nature of the inspection mechanism depends upon what is being inspected. A good model in one instance might be a poor one in another. Nor can the extent and depth of inspection be necessarily correlated with the gravity of the threat posed by a particular object.

Even an inspection system that is highly satisfactory when it is devised is unlikely to remain so. There is a never ending race between the perfecting of detection and anti-detection devices. At one time the balance may shift in one direction and at a different time in the other. Furthermore, the objects covered by an inspection agreement may become more or less central to national security. Materials that hold the greatest war potential today may tomorrow be superseded by Technological developments not anticipated in a given agreement.

While such considerations seem to militate in favor of total disarmament and inspection of all major components of armaments, the author points out that this conclusion is now unrealistic. An inspection net adequate to determine that there were no hidden stockpiles or armaments and that materials used for peaceful purposes were not being diverted to weapons manufacture would require an invasion of sovereignty at almost every point in the society. In the current climate of distrust this appears unthinkable.

Whatever the area covered by the inspection system, it may range between two extremes. Current assumptions have been that the system must be a multilateral one. The author, however, pleads for further consideration of a reciprocal system. In most instances today, he asserts, the relationships involved are essentially bilateral—with individual states or groups of states opposing each other. Reciprocal inspection is easier to institute since each party relies on its own facilities rather than having to agree on third-party facilities. This in turn provides an element of reassurance. Nor, according to the author, is there any reason to assume that safeguards available under a reciprocal system are any less effective than under a multilateral system.

The present article serves as a useful reminder that inspection is a continuing problem that does not, as is often assumed, end

with signatures to an agreement. The importance and complexity of the subject justify in our view a treatment of greater length and density than is usual for *International Conciliation.*

LAWRENCE S. FINKELSTEIN, Vice-President of the Carnegie Endowment for International Peace, prepared this article during a year's leave of absence at the Harvard University Center for International Affairs. The Endowment is grateful to the Center for the opportunity provided Mr. Finkelstein to pursue his study of a subject of long-standing interest and for the facilities and cooperation from which he benefited. In addition to the present article, Mr. Finkelstein has recently published studies on "The United Nations and Organizations for the Control of Armaments" in *International Organization,* "Testing in the Atmosphere" in *The New Leader,* "Defence, Disarmament and World Order" in *Behind the Headlines,* published by the Canadian Institute of International Affairs, and "The Uses of Reciprocal Inspection" in a special issue of *Daedalus.*

ANNE WINSLOW
Editor-in-Chief

November 1962

Contents

Contents

Inspection — Bridge or Gulf?

INSPECTION HAS BEEN THE ISSUE on which disagreement has been most marked in recent negotiations, both on the nuclear test ban and on general and complete disarmament. British Foreign Minister, Lord Home, recently said "back and back again I come to the question of verification as the point on which the success or failure of our Conference will turn."[1]

The difficult task of devising formulas and methods for inspection which governments will consider both adequate and acceptable has challenged governments as well as others concerned with restraining the arms race and reducing the world's ominous burden of armaments. In the United States, for example, the greatest single research investment in the arms control field—with a budget of $60,000,000 in one year alone—has been the Department of Defense's Project Vela to examine detection methods to permit adequate supervision of an agreement to cease nuclear tests. The task is so difficult because it must concern itself not only with conflicting national objectives with respect to the inspection arrangements themselves, but also with the intricate interplay of inspection, the arms limitations to be supervised, and the texture of international relationships as they evolve under projected disarmament programs.

It is not merely that the goals of the great powers conflict today; the Western powers and the Communist powers are trying to negotiate long-term plans that accommodate their conflicting images of the future as well. The Soviet Union professes willingness to accept complete controls when there is complete disarmament, but refuses to accept inspection

[1] Conference of the Eighteen-Nation Committee on Disarmament, Final Verbatim of the 5th Mtg. ENDC/PV.5, 20 Mar. 1962, p. 13.

under a nuclear test ban agreement, which involves no actual reduction of weapons. The Soviet position was recently stated thus: "After the accomplishment of general and complete disarmament control will become unrestricted and comprehensive because then the States will no longer have anything to hide from one another."[2] The USSR's slogan is "no more control than there is disarmament." For the Western powers, the slogan is "no more disarmament than there is control." They insist on extensive controls of early measures of arms limitation; in a distrustful world, they maintain, inspection alone can generate the confidence that is essential if arms agreements are to be reached and carried out.

The slogans seem tantalizingly close together. To paraphrase them in broader language that would accommodate both wordings is relatively easy. French delegate Jules Moch sought to achieve this marriage in 1956 when he suggested the guiding principle: "Neither control without disarmament, nor disarmament without control, but, progressively, all the disarmament which can now be controlled."[3] However, while Mr. Moch may be said thus to have posted the banns, the marriage has not been consummated; the conflicting slogans reflect such significant differences over the role of inspection that no amount of verbal manipulation can bridge them. Surely it is no accident that throughout the postwar history of disarmament negotiations the parties have often shifted ground to advocate positions previously taken by the other side, *without thereby making agreement possible.* While this fact is often taken as evidence that the great powers have been capricious in their approach to the negotiations, quite the contrary may be true. It may signify recognition on their part that, however the form of expression may have changed, a constant, fundamental opposition of interests has made agreement impossible.[4] And there is

2 United Nations Doc. DC/203, 5 June 1962 (ENDC/3, 19 Mar. 1962), p. 8.
3 United Nations Doc. DC/SC.1/PV.69, 19 Mar. 1956, p. 10.
4 See statement of former United Kingdom negotiator Anthony Nutting: "I cannot honestly say that I believe there was ever a moment in all these negotiations when a real agreement was a practical possibility." *Disarmament: An Outline of the Negotiations* (London: Oxford Univ. Press, 1959), p. xi.

little profit in the kind of analysis that demonstrates how closely the parties' positions approximate each other on some matters,[5] because invariably the key differences are revealed in the language that remains unreconciled, or in what is not said.[6] What has been true of the disarmament negotiations in general has been true of the inspection issue in particular. This is not to say that these essential difference cannot be resolved; only that they have not been and that resolution is not in sight.

These differences have dominated the postwar negotiations from the beginning. The first Western proposal with regard to inspection, the Baruch Plan, called for international "managerial control or ownership of all atomic-energy activities potentially dangerous to world security."[7] As Bernard Baruch made clear, the purpose of such "managerial control or ownership" was to ensure against violation of the basic prohibition on "possession or use of an atomic bomb" or of the other proposed prohibitions. For the United States, the effective institution of an adequate control system was a prerequisite to relinquishment of its atomic weapons and facilities.[8] Even earlier than the Baruch Plan, in November 1945, the heads of government of the United States, the United Kingdom, and Canada—the three states that had collaborated in producing the atom bomb—issued a joint statement urging the creation of a United Nations Commission to make recommendations on, *inter alia,* "effective safeguards by way of inspection and other means to protect complying states against the hazards of violations and evasions."[9] Subse-

---

[5] See, for example, Philip E. Jacob, "The Disarmament Consensus," *International Organization,* Vol. XIV, No. 2 (Spring 1960), pp. 233-260.

[6] See Joseph Nogee, "The Diplomacy of Disarmament," *International Conciliation,* No. 526 (January 1960), pp. 279-289. James J. Wadsworth has also graphically described how apparent convergence of positions conceals differences. See *The Price of Peace* (New York: Praeger, 1962), pp. 88-92.

[7] "United States Proposals for the International Control of Atomic Energy: Statement of United States Representative (Baruch) to the United Nations Atomic Energy Commission, June 14, 1946," in U.S. Senate Foreign Relations Committee, *Disarmament and Security: A Collection of Documents, 1919-1955* (Washington: GPO, 1956), p. 191.

[8] *Ibid.,* p. 192.

[9] *Ibid.,* p. 81.

quent unanimous adoption of this language by the United Nations General Assembly[10] temporarily disguised, but did not remove, the basic disagreement between this position and that of the Soviet Union.

The Soviet emphasis was also established early. The Soviet plan on atomic energy, introduced in the United Nations Atomic Energy Commission in June 1946, called for renunciation of the use of atomic weapons, prohibition of production and storing of weapons based on atomic energy, and destruction of all stocks of atomic weapons within three months of the treaty's entry into force. Within six months thereafter, according to the Soviet plan, the parties were to pass legislation providing penalties for violations.[11] In subsequent elaborations of this plan it was made clear that the Soviet Union would accept controls only after the prohibitions had entered into effect.

Changing technology and the evolution of the negotiations themselves have altered the positions of the parties in many fundamental ways. The United States, for example, has long since abandoned the Baruch proposals for ownership or managerial control of atomic facilities. And the Soviet Union has come a considerable way in appearing to acknowledge the Western, and for many years now, the United Nations majority's, insistence on effective inspection and control as a condition for arms reduction. But the flavor of the original positions persists. To this day the West stresses the inspection arrangements and the Soviet Union emphasizes the kinds of prohibitions to be instituted.

The issues are real: the national interests of the main negotiating states conflict on many questions affecting inspection. The disagreements over inspection are an integral part of wider and deeper disagreements over disarmament

---

10 "Establishment of a Commission on Atomic Energy: Resolution of the United Nations General Assembly, January 24, 1946," U.S. Senate Subcommittee on the United Nations Charter, *Review of the United Nations Charter: A Collection of Documents* (Washington: GPO, 1954), pp. 427-428.

11 For a description of the Soviet plan, see Bernhard G. Bechhoefer, *Postwar Negotiations for Arms Control* (Washington: Brookings, 1961), pp. 44-46.

and its relation to national security, and over the place of disarmament negotiations in relation to national ends.

In a rapidly evolving strategic and political environment, the competition of national interests has generated conflicting proposals as to who should give up what and in what order. Both sides have sought to direct the negotiations along paths most congenial to their particular strategic needs and abilities. Nor is it surprising that this should be so; the needs of countries differently situated *are* different. Besides, for any government (although more for some than for others) reaching internal agreement on a negotiating initiative must be a difficult political maneuver. To obtain agreement from interested agencies and factions, among those who wish to negotiate and those who would prefer not to, may well require demonstration that, if the proposed initiative were adopted, the country would be better off in relation to its potential adversaries than if no negotiation took place.

No international agreements can be reached which do not somehow involve compromise. The fact that very little real international trading has occurred in the postwar disarmament negotiations suggests that the parties have until now regarded their interests and positions as being too far apart to make acceptable agreements possible. And in the absence of agreement on what arms they have wanted to reduce or eliminate, the great powers have not been under great pressure to seek to compromise their differences over inspection. Philip Noel-Baker, for example, points out that in 1952, and from 1954 to 1957, the disagreements were about "substantive measures of armament reduction,"[12] rather than about inspection arrangements. Bernhard Bechhoefer suggests that the Soviet Union has exploited differences over what is to be regulated in order to avoid confronting the basic dilemmas (dealt with in succeeding paragraphs) that inspection

[12] *The Arms Race* (New York: Oceana, 1958), p. 530. Witness also Soviet representative Valerian Zorin's statement in the Eighteen-Nation Conference: "Our differences are not over control, but over the content of disarmament." ENDC/PV.35, 11 May 1962, p. 60.

poses for that country.[13] He points out that when the negotiations got down to detailed examination of specific subjects —measures to reduce the hazards of surprise attack and the nuclear test ban—the inspection issue became unavoidable and vigorous disagreement soon developed.

The reverse possibility exists, too. Governments unwilling to get down to serious negotiation over what to regulate, because for one thing such negotiation might be revealing of their true strategic concerns, may prefer to disagree on the relatively abstract issue of inspection. It should not be too surprising if, when all the documents have been published, it turns out that the United States and the Soviet Union chose at various points during the past decade to focus their mutual disagreements on inspection because they were unwilling or not in a position to bargain about what was to be controlled.

The issue of inspection has also been a convenient vehicle for the Soviet Union. Because inspection is a highly technical question, difficult to explain to a world public weary of armaments, because to explain it requires more space than is available in the normal newspaper column, the public's tendency to oversimplify complex issues, is more than usually evident. Thus, the Soviet Union has been able in the past to make great propaganda capital out of the more dramatic, more easily registered "ban the bomb" approach. Its verbal acceptance of the necessity for arms control, its frequent assertion in recent years that it wants inspection and will accept whatever controls the Western powers wish when there is general and complete disarmament,[14] have tended

---

[13] Donald G. Brennan, ed., *Arms Control, Disarmament, and National Security* (New York: Braziller, 1961), pp. 272-274.

[14] Foreign Minister Andrei Gromyko recently told the Eighteen-Nation Conference in Geneva that: "The Soviet Union wishes to have the necessary guarantees that the disarmament obligations that have been agreed upon will be strictly carried out and that there are no loopholes which will permit the clandestine production of aggressive armaments once the process of general and complete disarmament has begun. Our country does not intend to take anyone at his word. . . . Nor do we expect others to take us at our word. The Soviet Union is a firm advocate of strict control over disarmament." ENDC/PV.2, 15 Mar. 1962, p. 11.

to dominate the reality that their general assertions do not lead to adequate agreements on the essential, if less dramatic, details.[15] It is hard to escape the conclusion that the Soviet Union, for at least much of the time, seems to have been interested more in employing the negotiations as a means of weakening the military and political position of the West than as a route to a viable disarmament system. James J. Wadsworth has accused the Soviet Union of employing arms control negotiations as "part of a grand strategy aimed at the eventual total defeat of the other side."[16]

Thus, central though the inspection question may be, it is misleading to view it as an issue separable from the larger context of agreement or disagreement in the disarmament negotiations.

Inspection is a prickly question in another way. One of the chief difficulties of disarmament is that, if there is to be much progress, there will have to be substantial invasions of national sovereignty and secrecy for purposes of inspection and verification. Secretary of State Dean Rusk expressed the point succinctly when he told the Eighteen-Nation Conference in Geneva: "Secrecy and disarmament are fundamentally incompatible."[17] Yet it is precisely this kind of invasion of their sovereignty that Soviet negotiators have, from the outset, sought to prevent. Soviet strategic capabilities depend far more on secrecy than do those of the Western countries. Moreover, the walls of secrecy that have been erected in Communist countries are essential to the existing governmental systems of the Communist world. To the Soviet Union, then, Western insistence that international control agencies must

---

[15] On this point, see Bernhard Bechhoefer's characterization of the Soviet technique, "Negotiating with the Soviet Union" in Brennan, *op. cit.*, pp. 269-271.

[16] Wadsworth, *op. cit.*, p. 21. See also Henry Kissinger's analysis of the hazards of negotiating with a revolutionary state, in the context of the test ban issue, in "Nuclear Testing and the Problem of Peace," *Foreign Affairs*, Vol. 37, No. 1 (October 1958). Another, earlier analysis of Soviet negotiating tactics in this field is Frederick Osborn's, "Negotiating on Atomic Energy, 1946-1947," in Raymond Dennett and Joseph E. Johnson, eds., *Negotiating with the Russians* (Boston: World Peace Foundation, 1951).

[17] ENDC/PV.10, 27 Mar. 1962, p. 9.

penetrate those walls of secrecy may seem an effort to undermine the Communist system itself. The achievement of a disarmed world, with its concomitant full-blown system of international inspection and control, would most probably alter drastically the conditions of government in the Communist world.[18] The Soviet Union is thus asked, for the sake of disarmament, to acquiesce in the transformation of its own system; it should therefore not be surprising that the Soviet Union does not hasten to reach agreement on inspection arrangements. Yet, it is difficult to disagree with Secretary Rusk. An open world *is* an essential condition of the kind of disarmament both the USSR and the Western powers profess to want. This dilemma, more than any other, supports the contention of those who believe that inspection is the key issue in disarmament. It also supports the belief of those skeptics who doubt that major progress toward disarmament will be easily or soon attained.

Secrecy is not a problem confined to the Communist states. There are other totalitarian societies for which access for the purpose of inspection would be no less disquieting. It is by no means certain that even an "open society" like the United States could easily accept inspection that might compromise industrial and commercial secrets. The effort in recent years to obtain international acceptance of the safeguards standards of the International Atomic Energy Agency suggests that other nations, too, are reluctant to permit incursions on their sovereignty.

How can the need for inspection arrangements adequate to generate confidence be reconciled with the reluctance of the Communist nations, perhaps others as well, to permit intrusions into their domestic systems? And further, how can the ultimate requirement for an open world be reconciled with closed governmental systems? If disarmament depends on resolving the absolute opposition of ultimately conflicting necessities, there can be no disarmament.

---

[18] See Hedley Bull: "In the Soviet Union, such inspectors could scarcely fulfill their functions without undermining the whole character of Soviet society." *The Control of the Arms Race* (New York: Praeger, 1961), p. 101.

Even the Soviet Union has consistently recognized that far-reaching disarmament measures inescapably imply far-reaching inspection and control arrangements. This means that, if the end of the disarmament road is to be reached, there must be revolutionary prerequisite changes—changes that substitute the will to cooperate for today's pattern of international conflict and produce in the Communist world and elsewhere the conditions that make full inspection either acceptable or no longer necessary. No one can predict that such revolutionary changes will take place. The disarmament problem is thus to identify and undertake those initial measures that will start the world on the disarmament path, provide adequate grounds for confidence on the part of suspicious governments, and avoid confrontation of those ultimate issues that cannot be solved under today's conditions. In this way the passage of time and the developing experience of arms limitations might lead to the necessary transformations.

This is no ordinary challenge. Well developed inspection arrangements, both intensive and extensive, that might provide the requisite confidence cannot, in all probability, be negotiated in the near future. Thus the key to progress in reducing arms may well be the ability of governments to devise, and their willingness to accept, inspection systems with a high tolerance of error. One way to state the issue is to ask whether governments will or should accept a large mesh net, designed to catch only large violations that would overturn strategic balances and endanger peace and national security; or whether a finer net, to catch all or almost all breakdowns of performance, is essential.[19] The limitation of armaments poses the sharp issue whether maximum inspection arrangements are needed or whether minimum arrangements can be accepted. Addressing this crucial question requires examination of the functions, limits, and methods

[19] I am indebted to my colleague at the Harvard University Center for International Affairs, James L. Richardson, for suggesting this appropriate simile.

of inspection. While the burden of the analysis in the remainder of this manuscript will rest on the inspection issues as they affect the great powers, especially the Soviet Union and the United States, the analysis will be in considerable measure applicable to other countries as well.

The Functions and Setting of Inspection

IN THE NARROWEST SENSE, the purpose of inspection is to supply information about the observance of obligations to regulate armaments. More precisely, since governments ordinarily obtain a great deal of information through various open and clandestine channels, inspection serves to supplement the information from these sources and to enhance the reliability of what may already be known. Information derived through inspection also provides public evidence about performance of obligations under systems to regulate arms.

To leave the matter here, however, is to leave unanswered all the significant questions about the role of inspection in the complex process of reducing the threat of national armaments in ways that do not impair national security, or increase the risk of war. These questions lead to an exploration of the interplay between what is being regulated (conventional forces, nuclear weapons, delivery systems, military dispositions), the strategic environment that results from the regulation (relative stability or relative instability), and the measures available to states that are victims of violations (reciprocal violation, other national military or political responses, abrogation of the agreement, community sanctions, or enforcement measures).

Before examining these facets of the problem, however, some preliminary observations are in order. First, inspection arrangements are predicated on the assumption that agreement on an arms limitation does not necessarily substitute harmony and mutual trust for the existing pattern of international relationships. It is assumed that even hostile nations

can find common interests in reducing the risks and the burdens of unbridled arms races. Inspection, in the words of one scholar, is "the vehicle for the hope that some simple bridge can be found across the abyss of distrust inherent in the contemporary international power struggle."[20] A British scholar, Hedley Bull, has pointed to the tendency to regard adequate provisions for inspection and control as important only in making agreement possible on the measure of reduction or limitation that is desired. He rightly suggests that this is but part of the problem.[21] Just as important, perhaps even more important, is the actual working of the inspection arrangement after the agreement has gone into effect, because of its impact both on the national interests of the participating states and on the quality of the relations between them. An inadequate system of inspection that generates doubts and uncertainties will also generate international friction. A system that does not work satisfactorily could convince the parties that national self-interest is not being served—and it is on their continued belief that self-interest is being served that the survival of the system depends. For these reasons a faulty system is unlikely to facilitate, much less expedite, progress toward further, more advanced measures of arms regulation.

Three Functions of Inspection

Inspection is called upon to perform functions that, to the extent they are necessary at all, are vital to the successful achievement of the ends for which agreement has been reached. There are three such functions, overlapping but not synonymous: (1) to help deter violations, (2) to detect violations that have occurred, and (3) to provide reassurance that commitments are being fulfilled.

---

[20] Robert H. Cory, Jr., "International Inspection: From Proposals to Realization," *International Organization*, Vol. XIII, No. 4 (Autumn 1959), p. 496.

[21] Bull, "Two Kinds of Arms Control," in *Studies in Disarmament and Arms Control*, Adelphi Papers No. 2 (London: Institute for Strategic Studies), pp. 14-15. (Mimeo.)

With regard to deterrence, if a would-be violator has reason to believe that there is a good chance he will be detected in his attempted evasion of his obligations, the theory goes, he will be deterred from committing it. However, it is now acknowledged that this will be so only if he has reason to anticipate that the consequences of detection will outweigh the benefits of violation. Detection alone is not a deterrent. Detection coupled with an unfavorable balance of ensuing consequences is.[22]

The second function of inspection is to detect violations when they occur, and to demonstrate that they have occurred as clearly and convincingly as possible. The importance of this function cannot be overstated. It may well be an essential prerequisite of any significant arms agreement that the parties have assurance that they can count on such information in order to make whatever feasible response is called for.

The third function is reassurance. Parties to an arms agreement need to be reassured that the agreement is operating as it should. Here attention ordinarily focuses on the role of inspection systems in establishing, within tolerable margins of error, that violations are not occurring. Increasingly though, it is being recognized that it is also important for an inspection system to supply information of a positive character demonstrating that the obligations of the treaty are being observed and that the system itself is operating as it should. The difference between failing to demonstrate the existence of violations and proving performance of obligations is a subtle but important one. Unless the parties offer considerable cooperation, however, to prove that something *is* being done may be impracticable under any feasible inspection system, especially when the "something" is negative (non-violation of an obligation). There is an important point here. The effective operation of arrangements to regulate arms depends on the continued belief of each party that it has an interest in the survival of the arrangements. Each,

22 The pioneer statement of this problem is: Fred C. Iklé, "After Detection —What?" *Foreign Affairs,* Vol. 39, No. 2 (January 1961), pp. 208-220.

therefore, has a stake in satisfying the other parties that it is carrying out its obligations. And since demonstrating compliance is an act in which each party should be more expert than any outside agency can hope to be, an inspection system should allow for opportunities for the parties to provide evidence of compliance so that all the burden of proving violation is not placed on the system.

The importance of information to show that the system is operating as it should is evident. Once an inspection system has been set up, its continued smooth performance is presumed to be an essential condition of national confidence that there is no violation of the obligations being supervised and that future violations will be discovered. Even if there is no direct evidence of violation, the interruption of important flows of information will create doubt as to whether the parties are living up to their obligations.[23]

All three of these functions may be necessary to the successful working of any arrangement to regulate arms. Clearly, the second—detection of violations—becomes most relevant to an arrangement that is not working successfully. Nevertheless, for the second function to be performed well will ordinarily require that the inspection system have the capacity to perform well the other two functions. The assumption seems justified that variables other than the differences among these three functions will in most cases determine the nature and the severity of the demands made on inspection systems.[24]

What are those variables? They are the three alluded to earlier:[25] (1) what is being regulated; (2) the resulting strategic environment; and (3) measures in response to violations.

---

23 Brennan and Halperin identified somewhat differently what they termed "orientations" for inspection: 1) to insure detection of non-compliance; 2) to deter evasion; or 3) to guarantee security. This scheme omits the "reassurance" factors and takes rather a minimum view of what should be demanded of inspection. See Donald G. Brennan and Morton H. Halperin, "Policy Considerations of a Nuclear-Test Ban," in Brennan, *op. cit.*, pp. 234-266.

24 But see Lincoln P. Bloomfield's suggestion that reassurance may make severe demands of inspection in *The Politics of Arms Control: Troika, Veto, and International Institutions,* Special Studies Group, Study Memorandum No. 3 (Washington: Institute for Defense Analyses, 6 Oct. 1961), pp. 10-11.

25 See p. 15.

To inspect the elimination of nuclear weapons stockpiles involves different techniques and carries a heavier freight of consequence than to inspect an agreement to limit conventional forces to existing levels.

The kinds of arms regulations that might call for inspection are almost infinitely various. Some measures would involve no disarmament at all—for example, agreements to stabilize budgets, personnel, or weapons at existing levels, or to refrain from orbiting weapons of mass destruction in outer space, or to cease testing nuclear weapons, or to refrain from certain types of research. The agreement not to militarize Antarctica was such a regulation. Agreements regarding the deployment of military forces would fall into this category, as would arrangements to safeguard against surprise attack by providing for the exchange of information or for stationing of monitors or control posts at strategic installations.

Another type of arms arrangement might provide for the reduction, but not elimination, of existing armaments or categories of armaments by fixed amounts or numbers, by ratios or percentages, by destructive capabilities, or to fixed levels. The latest United States proposals for general and complete disarmament advocate this approach, covering all weapons and particular types.[26] Still another type would call for the immediate complete elimination of all weapons or forces of certain kinds, or of all kinds. All the types of arrangements mentioned as examples, and many more, have actually figured in proposals advanced at one time or another in the postwar search for acceptable measures of disarmament.

Inspection methods must be responsive to the needs posed by the objects being controlled; the range of possible techniques is great. Technological monitoring, employing instrumentation such as seismographs and radar, is one technique. It is relevant to such limitations as a nuclear test ban and regulation of space vehicles. Aerial and space surveillance, using advanced photographic technology, can be useful in

[26] United Nations Doc. DC/203, 5 June 1962 (ENDC/30, 18 Apr. 1962).

checking, for example, on elimination or geographic restriction of missile emplacements and prohibition of production of designated major weapons systems.

In many ways human observation is the best means of inspection. On-the-spot inspection can take the form of permanent control posts or regular or *ad hoc* inspection visits. It is pertinent, either as a primary or supporting inspection means, to almost all limitations. Records examination, either of fiscal records or of production and material controls, is relevant to production restraints and budgetary limits, among others. Personnel records inspection may also be relevant to limitations on military manpower or—by keeping tabs on individuals with key functions and special skills—on weapons research, development, and production. So-called "psychological" or human inspection is designed to elicit information from the population of the country being inspected and is relevant to all types of restraints.[27]

It is not possible, by perusing examples of kinds of arms limitations and of inspection techniques or even by examining complete inventories of both, to reach any *prima facie* conclusions as to which categories pose greater difficulties of inspection or present greater risks to the participants. There is no simple progression of difficulty or significance from restraints that do not actually reduce arms, through those that call for partial reductions, to total reductions. It may be more difficult technically and politically, for example, to inspect an agreement not to orbit vehicles of mass destruction in space than an agreement to eliminate all naval vessels

[27] The reader interested in fuller examination of this range of existing and anticipated capabilities of inspection systems is referred to the considerable body of excellent literature on the subject. See the pioneer collection, Seymour Melman, ed., *Inspection for Disarmament* (New York: Columbia Univ. Press, 1958). See also chapters by Sohn and Frisch, Kalkstein, and Phelps, in David H. Frisch, *Arms Reduction: Program and Issues* (New York: Twentieth Century Fund, 1961); chapter by Wiesner, in Louis Henkin, ed., *Arms Control: Issues for the Public* (New York: Prentice-Hall, 1961); chapters by Wiesner, Feld, and Bohn, in Brennan, *op. cit.*; Bernard T. Feld, *et al.*, *The Technical Problems of Arms Control* (New York: Institute for International Order); chapters by Bohn, Melman, Gerard, Karl Deutsch, and Schelling, in Evan Wright and Morton Deutsch, eds., *Preventing World War III* (New York: Simon and Schuster, 1962).

carrying guns greater or smaller than a certain caliber. And, despite the fact that the former involves no actual disarmament while the latter does, violation of the former might pose greater risks to non-violators than might violation of the latter. Measures often considered to reduce the risk of surprise attack involve no disarmament whatever and yet would require complex inspection arrangements.[28]

At the other end of the scale, some measures of complete disarmament might require no inspection at all. In many circumstances, the Soviet Union, for example, might have no interest in inspecting a United States commitment to destroy its stocks of Springfield rifles or Sherman tanks (if any of these elderly weapons still exist). Sometimes a violation would be tolerable or, if not, self-evident, or easily observable by existing means. No special arrangements are needed, for example, to supervise a Soviet pledge not to sail a missile cruiser unannounced into New York Harbor.

It should be apparent that inspection arrangements to meet the needs of various kinds of agreements to regulate arms cannot be determined by general principles. Each arrangement has to be examined in terms of the technical requirements it presents and in terms of the importance of the risk that violation would pose to non-violators.

One could organize the range of possible arms regulations in a matrix that would look like this:

Difficulty of Inspection

Degree of Seriousness of Violation	Relatively easy to inspect	Fairly hard to inspect	Very hard to inspect
Very serious	Very serious Relatively easy to inspect	Very serious Fairly hard to inspect	Very serious Very hard to inspect
Fairly serious	Fairly serious Relatively easy to inspect	Fairly serious Fairly hard to inspect	Fairly serious Very hard to inspect
Slightly serious	Slightly serious Relatively easy to inspect	Slightly serious Fairly hard to inspect	Slightly serious Very hard to inspect

[28] On this point, see Wiesner, in Brennan, *op. cit.*, p. 208.

In this matrix the difficulty of inspection refers only to the technical problems.

Obviously, the place to look for workable first measures is not in the upper right-hand corner. Measures in the lower left-hand corner may be worthwhile, particularly if they have the potential of generating mutual confidence. But they are unlikely to be important enough or to pose sufficiently difficult tests for the inspection machinery to generate much movement toward larger, more important measures of arms reduction.

This matrix may be more useful in suggesting places not to begin than in giving positive guidance. While it is apparent that one should be searching for measures that lie in the area demarcated by the broken line, the broad descriptions of the matrix do not give enough qualitative definition to be very helpful in pinpointing what is usefully achievable. Each measure in the appropriate area of the matrix needs to be individually examined to assess what risks it poses and what difficulties of inspection it presents. Particular care must be taken to avoid assessments that are too static. Both the elements of risk and difficulty of inspection can change rapidly.

The explosive growth of technology and the impact of major investments in research may very speedily alter the problem of inspection. This applies to the development of weapons, to the techniques of evasion, and to the capabilities of inspection apparatus. Missiles, for instance, were not vulnerable to previously existing capabilities for detecting approaching aircraft. Nuclear submarines are invulnerable to old techniques for submarine detection. Evasion techniques are a constant subject of military concern because the successful conduct of war requires an ability to deceive the enemy and evade his efforts to identify and intercept your forces. The layman obviously can know few of the details. Yet, he can be sure that efforts are constantly being made to improve the capacities of aircraft, missiles, submarines, and other mobile instruments of war to evade detection. Camouflage to conceal ground installations from enemy aerial surveillance

and to hide infantrymen from snipers is a matter of continuing interest to military services. Not all military methods of evasion are relevant to inspection of arms control agreements, but, obviously, many are. On the other side of the scale are efforts to improve detection techniques. The Ballistic Missiles Early Warning System (BMEWS) was a response to the problem of detecting approaching missiles. Project Vela was an attempt to improve techniques for detecting nuclear tests. It also performed another function—to increase understanding of the problem without reference to advancing technology. To understand more, however, does not necessarily make inspection easier; increased understanding after the Geneva Conference of Experts in 1958 made inspection of the proposed nuclear test ban appear more difficult. No over-all prediction, obviously, can be made as to whether inspection is likely, in general, to become easier or more difficult. All that is certain is that the problem will change.

It is often stated, but deserves reiteration here, that no inspection arrangement can be foolproof, although the fact that certainty cannot be achieved is clearly no reason to eschew efforts to control arms. The problem is to devise inspection systems that reduce the probabilities of successful evasion to tolerable levels. Some calculations of probability can be worked out mathematically or statistically; others represent no more than informed guesses. Since the attempts at statistical precision always rest on postulated assumptions as to the conditions under which inspection will go forward —some of them, to be sure, descriptive of existing or predictable reality, but others speculating about unpredictable developments—they too rest ultimately on the best guesses of the analysts.

Furthermore, it must be recognized that in some cases no inspection arrangements can even reduce the uncertainties to acceptable levels. What is "acceptable," of course, is not an absolute question. It depends on political circumstances, the general climate of confidence, the relationship of the particular measures to other existing or contemplated arms

agreements, and the available alternatives to accepting unacceptable risks. It is apparent, though, that in today's circumstances, no agreement can be reached to eliminate nuclear stockpiles because no known methods of inspection would provide high assurance either that the total existing stockpile had been declared at the beginning of the control period or that weapons-grade nuclear materials were not being produced illegally or diverted from peaceful to military uses. The production of bacteriological and chemical weapons would also be extremely difficult to inspect with high assurance; they can be produced in lethal quantities in small experimental laboratories, and to control their production would require a degree of supervision of research facilities that can certainly not now be accomplished and may never be realizable. Nuclear materials and perhaps bacteriological and chemical weapons have the quality that small amounts, the production of which can be easily concealed, may have major implications for war-making ability and, hence, for the security of participating nations and for the balance of strategic relationships. Other categories may pose similar problems because their production cannot easily be distinguished from the production of implements for peaceful purposes. Space vehicles may fall within this category, although presumably arrangements for pre-launch inspection could provide assurance that vehicles were being launched only for peaceful reasons. Radar, electronic, and communications equipment having great, perhaps decisive, military implications would be difficult to distinguish from similar equipment being produced as part of man's crusade to explore the heavens and spin a web of global communication.

The space vehicles example suggests one response to the dilemma posed by objects of control that cannot be inspected with high confidence. That is to rely on controls at other, more accessible, points in the chain of events from production to use. However, no matter how successful efforts to design inspection systems may be, some kinds of weapons will always pose serious obstacles to reliable inspection. Chemical and bacteriological weapons may well fall in this category.

Another response is to devise arms limitations that avoid facing this dilemma. The elimination of nuclear stockpiles is obviously now beyond the realm of achievement, and to postpone the risks attendant upon making the attempt is not only prudent; it is probably a necessary condition of progress. For this type of risk to become acceptable, many changes will have to have occurred in the present environment—amelioration of political conflict and a confidence-inspiring history of successful arms limitation are among the necessary ingredients. Changes of this order will require the passage of considerable time, and, if they are possible at all, will be achieved only by postponing high-risk measures until late stages of the progression toward general and complete disarmament.

The Strategic Environment

The key to the risks and the viability of arms control arrangements lies in the situations that obtain after the arrangements have been implemented. Many ingredients are involved, all of them difficult to assess with confidence. There is the further complication that governments are asked, before agreements are entered into, to anticipate how they will operate in a future that can be at best but dimly perceived.

The intentions of the parties are important. Is it, to state the matter in extreme terms, their purpose to exploit agreement to reduce the risks of war, cut down armaments costs, increase mutual confidence, stabilize international relationships, and build the prerequisites for more far-reaching measures of disarmament? Or, contrariwise, is an arms agreement, in Ambassador James Wadsworth's terms already quoted in a different context "part of a grand strategy aimed at the eventual total defeat of the other side"? Will some or all of the parties seek to take advantage of the unavoidable lacunae or obscurities in agreements in order to gain advantages over the other participants? Or will they accept restraints designed to build confidence and stability? What is the political setting? Are there important, unresolved issues? What are the psychological conditions in which the agreements operate?

Does one party or do all believe that arms reductions and the environment that results from them will hasten the achievement of national goals? Is there mutual suspicion leading to friction and constant pressure against the apparatus of the system? Or is there belief that the agreements mark a departure with a better future in store? What are the consequences of frustration of these hopes? One way to summarize such questions is to ask whether the parties believe the agreements will lead to a condition of greater or lesser security. And in this assessment the central consideration is the strategic relationships that will result from the agreements.

To begin with, governments inevitably view most of the questions raised above pessimistically, or at least conservatively; they are unable to entrust the future of the nations for which they have responsibility to agreements based on expectations that mutual confidence, good feeling, and reliable performance of obligations will prevail. Agreements *will* have obscurities or lacunae and it is only prudent to assume that responsible authorities will responsibly seek to convert them to national advantage or, at the very least, to avoid national disadvantage, which usually leads to the same result. To take just one hypothetical but fairly obvious example, can it be assumed that defense ministries will not seek to build bigger, faster, newer weapons of a given category when an agreement has been reached to limit the number permitted? Nor are such efforts necessarily an evidence of hostility toward the other parties to the agreement. Defense ministries behave the same way when the restraints are imposed by sister finance ministries or by government comptrollers. It has to be taken for granted—at least in the early stages of the disarmament process—that, in shaping their military capabilities, participants in arms control arrangements will try to fashion the most effective defenses within the restraints established, even if they do not try to bend, evade, or break those restraints.

Moreover, as has already been made clear, there is no reason to assume that mutual confidence will prevail at the moment of decision on an arms agreement. Political tensions

are likely to be high over important issues in one or another part of the world at the very moment the potential parties are asked to place confidence in a disarmament agreement. In 1962, Berlin, Laos, Vietnam, and Cuba are the indicators of the troubled relationships. There is not much reason to expect that these issues or their successors will not continue to agitate the international scene for a long time.

Thus, if mutual confidence cannot be anticipated, it should not be surprising if governments insist that they have the bases for self-confidence—the ability to support national interests with the resources remaining to them after the proposed agreement takes effect. Since this ability is not an absolute phenomenon, but involves a relationship to the abilities of others, such self-confidence then depends on the strategic relationship that prevails under an arms agreement, among the participants and between them and other states.

In acknowledgment of this principle, current disarmament negotiations accept the injunction that disarmament should "be balanced so that at no stage of the implementation of the treaty could any state or group of states gain military advantage, and so that security would be ensured equally for all."[29] From the statement of this principle to its satisfactory fulfillment, however, is a long and tortuous road, as all the negotiations on disarmament have amply demonstrated. There is agreement that to maintain the sought-for balance involves proceeding by stages, and there is even agreement that the magic number of stages is three. But there consensus ends. To begin with, the powers disagree fundamentally over what reductions should take place in the first stage.

The United States, in its 18 April 1962 proposals, has advocated a 30 per cent across-the-board cut in both strategic delivery systems and other weapons in the first stage. The

[29] This clause, based on the language of the McCloy-Zorin agreement of 20 September 1961, is incorporated in the latest US proposals for general and complete disarmament. The Soviet Union draft Treaty on General and Compete Disarmament contains language that differs only slightly from the US draft. See United Nations Doc. DC/203, 5 June 1962 (ENDC/2, 19 Mar. 1962).

United States contends that a percentage reduction[30] is the most equitable way to cope with the problem (since the parties will begin reductions from different levels of capacity and with different strategic requirements) in that it will preserve existing ratios of force at lower arms levels. Moreover, the across-the-board approach, involving cuts both in nuclear and conventional capabilities, is designed to even out whatever disadvantages any party may suffer as a result of reductions in one sphere. In gross terms, the United States would be expected to give up more absolute nuclear strength on the assumption that it would begin with an advantage over the Soviet Union in this sphere; at the same time, the Soviet Union would give up more conventional weapons in absolute terms because of the expectation that it would have a lead in this sphere at the outset of the reduction process. Each would retain its lead in the sphere in which it was predominant at the outset. This brief sketch barely begins to hint at the complexity of the United States plan, which also proposes measures in other spheres, among them cessation of production of nuclear weapons materials and reduction of stockpiles, measures against surprise attack, and first-stage reduction of military personnel to 2.1 million each for the USSR and the United States.

Little of this plan has met with Soviet favor. The USSR has proposed, instead, a scheme calling in the first stage for complete elimination of all means of nuclear delivery,[31] dismantling of foreign military bases and withdrawal of foreign troops from alien territory, reduction of armed forces to fixed levels (1,900,000 each), the reduction of conventional armaments by 30 per cent, and of armaments production and military expenditures "proportionately" to the other reduc-

---

30 By advocating percentage reduction the US has adopted an approach earlier followed and since abandoned by the Soviet Union.

31 The Soviet Union agreed during the 17th session of the UN General Assembly that there might be exception "for an agreed and strictly limited number of intercontinental missiles, anti-missile missiles and anti-aircraft missiles in the 'ground-to-air' category, to be retained by the Union of Soviet Socialist Republics and the United States of America, exclusively in their own territory, until the end of the second stage." United Nations Doc. A/C. 1/867, 24 Sept. 1962, p. 6.

tions. The Soviet proposals provide, with respect to each measure of reduction, that inspectors of the proposed International Disarmament Organization are to "verify implementation" of the specified measures.

For the purpose of this paper, the key aspect of the United States plan may be that the United States envisages a measured pace toward complete disarmament. Although a 30 per cent cut in United States nuclear delivery capability and conventional armaments is a major slice, 70 per cent would remain at the end of the three-year first stage. Moreover, even the 30 per cent reduction would take place in annual bites of 10 per cent each. In any one of the three years, each country would risk a disadvantage of less than 10 per cent if the other should fail to fulfill its obligations. That risk should be tolerable to both sides. The United States plan means that the government believes that United States security would not be dangerously threatened by a breakdown of the agreement at any point during the three-year progression to the second stage. The proposals, by and large, seem designed to create a relatively stable first-stage situation—and one relatively invulnerable to levels of violation likely to rupture the agreement.

Some of the specific measures proposed could be inspected relatively easily if the problem is simply to provide assurance that proportional reductions on the basis of *declared* levels actually occur. For example, the destruction of nuclear delivery vehicles could take place in central locations and be observed by the inspectors. The same applies to conventional armaments. However, to ensure that production of nuclear weapons material has ended obviously requires quite an extensive and intensive inspection operation, because nuclear facilities would have to be inspected to make certain that such production has been stopped and that it stays stopped. The same is true of the conversion of nuclear materials to peaceful uses. Reduction of conventional forces to fixed levels involves more than counting the force reductions; it clearly, in its own terms, so to speak, requires counting the remaining forces to make sure they do not exceed the limit. And a

second thought about the seemingly simple measures of inspection reveals the complexity beneath the surface. If reductions of nuclear and conventional weapons are to take place by percentage, do not the over-all totals, on which the percentage reductions are to be based, need to be reliably confirmed to ensure that the parties make true declarations of the levels from which the reduction begins?

The elements of a perplexing dilemma are thus clearly delineated. The relatively minor risks that would be involved in the United States first-stage proposals suggest the possibility of limiting the extent and penetration of the inspection arrangements to ease the difficulties governments would face in accepting them. More intensive inspection would be postponed until later stages when the extent of the reductions would be more significant. Smaller violations would then yield greater "payoffs" than would result from violations of first-stage limitations. Under this approach, first-stage inspection measures would be limited to those needed to ensure that major violations, that might threaten security and stability, would not go undetected. It should be recognized that the latter is a "minimal" approach, based on only one of the relevant criteria. There is no doubt that, if the sole standard by which inspection arrangements are to be evaluated were the existence of relatively certain guarantees against de-stabilizing violations, the task would be much eased. Disarmament, however, will be an intensely political process in which the reassurance functions will have high significance for both international and domestic audiences—the United States Congress being but one. Some reassurance might be provided by the comparison between information supplied under negotiated inspection arrangements and other information that would presumably continue to flow outside the more formal inspection channels.[32] High confidence in the

[32] The Soviet Union's uncertainty as to how much is known of its military affairs might place it under some extra pressure to fulfill its obligations under arms agreements. If we have fairly high confidence in information available outside the inspection apparatus, Soviet behavior would be a good indicator of intentions. However, there is bound to be a margin of doubt as to the reliability of such information in the absence of a fully elaborated

performance of the obligations under the United States plan, however, would necessitate fairly extensive inspection arrangements.

On the whole, while it will surely be difficult to reach agreement on high assurance inspection arrangements, it may also be difficult to reach agreement without them. Moreover, to postpone the issues until later stages is not to eliminate them. It is likely that some day declarations of existing force levels would have to be verified if arms reduction is to proceed to the low levels of high risk. At that time, also, very rigorous inspection controls would probably be essential with respect to many sorts of limitations if even the minimal criterion is to be met. Some would argue that the important thing is to get the process started in the hope that with experience will come confidence and with time, change that will either ease the application of progressively more rigorous controls or make them unnecessary because of the growth in international confidence. Others, however, would maintain that now is the time to get the disarmament process off on the right footing. Since rigorous inspection will some day be necessary, the argument goes, nations should show their commitment to the process by accepting immediately controls that will allow the development of high confidence; thereby tensions and suspicion could be reduced sooner and progress toward the long-term goal of general and complete disarmament could be accelerated. One reply to this could be that governments may be appropriately expected to demonstrate their good will by accepting the degree of inspection necessary to make the proposed measures of disarmament feasible, and that to ask more of them is to seek to invade sovereignty gratuitously or, as is sometimes alleged, for disguised partisan purposes.

---

inspection scheme and we could never be sure, for example, that misleading information was not being "fed" to the information sources. Brennan has said: "The extent of our information . . . leaves much to be desired. . . . The information is terribly incomplete, often misleading, and sometimes, downright false." "The Roles of Inspection in Arms Control," *Summer Study on Arms Control 1960: Collected Papers* (Boston: American Academy of Arts and Sciences, 1961), p. 247.

Thus, it is difficult to judge the weight that should be given the narrow strategic considerations in the assessment of inspection standards. In other words, on the one hand, there is a risk that minimal inspection requirements will pose threats to national security, to international harmony, and to peace. On the other hand, there is the risk that rigorous inspection demands will prevent any agreement at all.

The United States proposals actually advocate a fairly delicate balance between the extremes of minimal and full inspection. The plan establishes the principle of effective verification, including "assurance that agreed levels of armaments and armed forces were not exceeded" and that "activities limited or prohibited by the Treaty were not being conducted clandestinely." However, it goes on to advocate that inspection apparatus should be progressively developed in accordance with the principle "that the extent of inspection during any step or stage would be related to the amount of disarmament being undertaken and to the degree of risk to the Parties to the Treaty of possible violations." To strike the balance, the plan suggests the possibility of a scheme for sample inspection by zones. Under such a scheme, all arms reductions would be verified but the extent of the territory completely inspected to ensure that agreed levels were not exceeded would be gradually increased until, at the end of the third stage of the United States plan, "when all disarmament measures had been completed, inspection would have been extended to all parts of the territory of Parties to the Treaty."

Response to Violations

It has already been observed that inspection is most usefully viewed in its relation to the responses available to governments which are the victims of violation by one of the parties. Deterrence of violation depends on the nature of the responses available and on the likelihood that they

will be employed. Decisions to react depend, in turn, on the efficacy of inspection in filling the prerequisite need for information. In Hedley Bull's words: "The information gathered by intelligence agencies or international inspectorates . . . plays a part in a system of control only when it reaches the hands of those with the power and will to act upon it."[33]

The character of the inspection system's need for information depends on two interacting considerations. One is the severity of the violation and the consequent risks attaching to appropriate countermeasures. The second is the nature of the system of response, whether it is a "self-help" system or an organized international instrument for enforcing the arms limitations.

"Punishment" is often regarded as the purpose of measures taken in response to violation. Actually, it is probably the least important and least convincing of the reasons for such measures. One important reason, it is obvious, is deterrence; the assurance that appropriate measures can be taken that will limit the advantage of violation is a means of reducing the temptation to violate. Another important reason is to enable governments to rectify the imbalances, neutralize the threats, and repair the gaps that violations may create. A high degree of assurance that such measures will be available in the event of violation seems an essential condition of any important arms agreement coming into effect.

In general, minor violations—those that do not threaten the parties to any great extent—call for minor responses. This is because serious responses in themselves may involve great risk and are thus unlikely to be undertaken lightly by governments. In arms control, as in other spheres, the principle of condign punishment appears to apply. However, persistent minor violations might generate pressures for major, perhaps hazardous, responses, less because of strategic risks posed by the violations themselves than because the integrity of the system is important.

[33] Bull, "Two Kinds of Arms Control," *op. cit.*, p. 15.

Available responses range from very minor to extremely serious in rough correlation with the nature of the threats posed by violations. As long as nuclear capabilities continue to exist, it might be said that available responses begin at zero and approach infinity.

The appropriate response to violation at the lower end of the scale—perhaps the result of obscurity in the agreement, administrative error, or even limited efforts to probe the possibility of getting away with minor evasions—may, in some cases, be to ignore the violation, at least in public, Clandestine steps could then be taken to counter whatever damage may have been done, perhaps supplemented by a message to the violator that he has not gained an advantage.[34] Negotiating compliance may also be appropriate,[35] sometimes on the basis of newly agreed understandings as to what the agreement means and how its requirements may be fulfilled.[36]

Violations that threaten to de-stabilize military balances may call for more extreme responses. It should be noted, incidentally, that the very fact that an arms agreement exists may infuse an otherwise ambiguous action with a connotation of extreme threat.[37] Responses to such violations include compensatory violations—either the same measure as the violator's or some other measure to restore balance or to provide defense against the consequences of the original violation. Not all appropriate countermeasures need violate the agreement; some may fall outside the agreement's scope or involve activities permitted under the agreement but not previously undertaken. For example, if a nuclear test ban should be violated, the victims might decide to step up pro-

[34] Thomas C. O'Sullivan has examined some possibilities in this range, in "The Disadvantages of Reliable International Inspection and the Problem of Evaluating Information Needs" (Lexington, Mass.: Itek Laboratories, 20 April 1962). (Draft, hectographed.)

[35] This point was made by Brennan and Halperin, in Brennan, *op. cit.*, p. 264.

[36] On the problem of revising agreements to take account of needs for changes brought about by evolving circumstances, see pp. 52-57.

[37] See Brennan, "The Roles of Inspection in Arms Control," *op cit.*, pp. 250-251.

duction of nuclear vehicles or intensify research and testing in the field of anti-missile defense. Denunciation of the agreement—or of all arms agreements—is another available recourse, although a fairly extreme one, since it implies the possibility of a renewal of the arms race. Finally, military action, including nuclear war, cannot be ruled out as a response to extremely provocative violations. Deployment of nuclear delivery vehicles in apparent violation of an agreement to reduce the risks of surprise attack, for example, would force other powers to consider seriously whether or not to launch a "preemptive" nuclear strike to forestall the nuclear attack seemingly threatened by the violator.

The kinds of measures sketched in the preceding paragraph are designed to reduce the "payoff" to a violator by countering the military advantages his violation might otherwise generate.[38] But some of them also involve consequences to the over-all texture of relations among the parties; tensions might be heightened and the risks of war increased. The same may be said for responses that involve denial of diplomatic, economic, or political goals of the violator. Sanctions of this kind can be exerted in the direct diplomatic, economic, and political relations of the parties with each other. They can also be exerted by the action of permanent or *ad hoc* coalitions or alliances, by efforts to mobilize a hue and cry of international public opinion, through the institutionalized arrangements of the arms control organizations, or through the United Nations.

The implications of this range of possible responses for inspection needs are not entirely apparent. It seems clear that, before governments responding to violations undertake measures that themselves carry a heavy freight of risk or

[38] It should be noted, however, that there may be no way to reduce the "payoff" for some violations. It would do the victims little good to learn reliably that one of the parties had succeeded in clandestinely producing and deploying enough nuclear force or a defense against missiles sufficiently effective to overturn the balance of deterrent power. On this point see Paul Y. Hammond, "Some Difficulties of Self-enforcing Arms Agreements," *The Journal of Conflict Resolution,* Vol. VI, No. 2 (June 1962), p. 106. Hammond deals with a possible Soviet violation of a disengagement agreement in Europe.

potential disadvantage, they will need to have unambiguous evidence of violation; this implies a need for information that is ample in quantity and high in reliability. However, the key element here is that the *information* available to governments be persuasive that the violation has occurred, whether the information comes through the established inspection apparatus or *via* the other channels through which information customarily flows to governments. Whether or not the inspection arrangements demonstrate the existence of a violation, a government convinced by its own evidence that a serious violation has occurred will act in defense of its interests. Such information may not be as reliable an instrument of deterrence as a high-quality inspection arrangement. However, the very fact that much is unknown about the information-collecting capacities of individual governments may make it more difficult to devise techniques of evasion that assure escape from detection. The limits of an international system, on the other hand, will be known and may thus help a potential evader to calculate his chances of getting away with a violation.[39]

With respect to very threatening violations, inspection arrangements seem to serve a reinforcing function. They fill in the gaps in government intelligence sources, provide a means of checking the reliability of information that is otherwise available, and permit governments to avoid compromising revelations of their own information sources. Probably, inspection arrangements cannot be substituted for governmental intelligence sources; governments will continue to depend on these.[40] Nor is it likely that governments will confine their inspection demands to the kind of information they are not confident of obtaining by their own resources. To do so might reveal too much about their intelligence

[39] On this point, see Fred C. Iklé, *Alternative Approaches to the International Organization of Disarmament* (Santa Monica, Calif.: The RAND Corporation, Feb. 1962), p. 9.

[40] T. C. O'Sullivan has explored some of the ways in which national information systems and international inspections arrangements interact in "Nuclear Test Ban, Detection Networks and National Decisions" (Lexington, Mass.: Itek Laboratories, 20 Feb. 1961, revised 9 May 1961). (Hectograph.)

capabilities. The inspection apparatus might have the added utility of helping to mobilize international sympathy and support for any countermeasures governments feel constrained to take in their own interest.

Curiously enough, the role of inspection may be relatively more central with respect to responses to lesser violations, despite the fact that such responses probably will make less stringent demands as to information. If the appropriate response to a suspected minor violation is to inaugurate inquiries or other procedures to determine whether or not a violation has in fact occurred, mere suspicion is enough of a basis for the response (although a limit of some sort exists by analogy with the boy in the fable who "cried wolf" too often). Governments may feel able to make other relatively minor responses, such as diplomatic protests, threats to re-examine aid programs, minor adjustments in military dispositions or defense budget allocations, introducing condemnatory resolutions before international organs, and the like, without having absolutely reliable information at hand. As the risks of responses diminish, governments may become less likely to insist on absolute certainty as the basis for action. However, there is obvious disadvantage in having information systems that encourage governments on the basis of faulty information to take actions that are if nothing else at least international irritants. Moreover, since in such instances much less national interest is at stake, reacting governments are less likely to wish to proceed without assurance that others support them; they will need to lay before others convincing information that a violation has occurred and that the response is justified.

The preceding discussion has assumed that nations confronted with violations of arms agreements will react on the basis of self-help. In present circumstances, no other assumption is possible. Even when proposals for arms limitations incorporate elaborate arrangements for international inspection apparatus, provision for collective enforcement measures is relegated to a remote future. In the words of one recent article: "There is a Rubicon that divides the Gaul

of basically untrammeled national sovereignty from the Tuscany of meaningful supranational authority."[41] The prerequisite for the latter is a degree of international consensus that will permit effective sanctions to be applied by the law-abiding against those who violate the law, whoever they may be.

Thus, the nuclear test ban treaty draft put forward on 18 April 1961 by the United Kingdom and the United States outlined an elaborate system of international inspection, but did not provide even for collective decisions as to whether violations have occurred, much less for collective action in response to violations that have been identified.

The language of the most recent United States plan for general and complete disarmament is obscure on these points. But since, at the end of the proposed second stage, the United States and the Soviet Union would retain 35 per cent of their original nuclear systems and conventional weapons, the United Nations Peace Force proposed by the United States would have to be a strong one to be of military significance with respect to either of these great powers. If the international community were able to solve the problems of creating, controlling, and using such a force, a degree of consensus would exist, which practically by definition would eliminate the problems of enforcement of arms agreements with which this paper is concerned or reduce them to easily manageable proportions.

Therefore, meaningful analysis of inspection arrangements has to assume that they will work in relation to a "self-help" system. Even if some responses to violations were made by alliances or other continuing or temporary collective groupings, self-help would still be involved, albeit by groups of like-minded states.

One important consequence of this state of affairs is that, in its essentials, the enforcement of arms agreements is not dependent on the crystallization of international consensus.

---

41 Lincoln P. Bloomfield, "Arms Control and World Government," *World Politics*, Vol. XIV, No. 4 (July 1962), p. 641.

Such consensus may be important in various ways, such as adding dimensions of political risk to the other risks incurred by a nation that violates an arms agreement. As has been suggested above, consensus may be more important in avoiding and rectifying minor transgressions than in dealing with the major issues. Essentially, however, the operation of world-wide arms control systems depends on the systems' ability to satisfy a few great powers that their national interests are being served by the web of obligations, institutions, and functions growing out of the desire to limit armaments.

In establishing inspection arrangements and in operating them, nothing should be allowed to obscure the central principle that the primary audience for the information developed by inspection systems is that small circle of governments on whose continued cooperation the survival of major arms control systems depends. There are other audiences to be sure. Every effort should be made to meet the needs of other governments and of the world public as well. But when, as is inevitable, the two orders of priority get in each other's way, the first should prevail. The primary purpose of international inspection arrangements is to ensure the availability of an adequate flow of information, as unambiguous as possible, to a selected number of governments which need to be assured that obligations undertaken under arms agreements are being fulfilled, that the apparatus of inspection is functioning as it should, and that the governments will know it, should either no longer be true.

Of course, over the longer range, the unfolding possibility of collective enforcement would significantly alter this conclusion. It might then be necessary to contemplate arrangements to employ inspection as an instrument of collective decision-making. For present purposes, however, it does not seem necessary to venture onto that unexplored and distant terrain.

Some Problems of Inspection

THIS CHAPTER WILL EXAMINE selected inspection problems that have already arisen in acute form in the negotiations, or which seem likely to be confronted in the future. They demonstrate how complex are the considerations that bear on choices between minimal and full inspection.

Detection and Identification

The nuclear test ban negotiations have shed light on an issue that might increase in importance if, as appears likely, advanced military capabilities should be dispersed more widely in the future. That issue is how, once a violation is suspected as a result of the working of the inspection arrangements, the fact can be confirmed and responsibility assigned. In short, inspection in some cases may involve both detection and identification of violations. This problem arises particularly in cases where initial detection measures employ distant technological monitoring devices such as have been proposed with respect to nuclear tests and limitations on activities in space.

With respect to the nuclear test ban in particular, Secretary of State Rusk pointed out:

> Detection, however, is only half the story; in fact it is rather less than half. The primary concern is to know exactly what has been recorded or detected. For example, the signal received on a seismograph from an underground nuclear explosion looks like the signals received on a seismograph from many types of earthquakes. Signals which may come from a small nuclear detonation in the atmosphere may be difficult to detect. In each case, the overwhelming difficulty confronting any control system monitoring

a nuclear test ban is how to differentiate among various recordings or detected signals, how to tell which is a natural phenomenon and which is a nuclear explosion.[42]

Identification appears necessary to confirm that a detected event was really a violation. Confirmation is important for two reasons. One is to enable non-violating governments to take appropriate action in response. The second is to avoid disputes between governments advancing conflicting interpretations of the evidence. The Burmese representative at the Eighteen-Nation Disarmament Conference, James Barrington, made a classic statement of the problem:

> After the most careful and earnest consideration, it seems to us that the claim of the Soviet Union that all nuclear explosions can be detected and identified by means of national detection systems, and that no international control is therefore necessary, leaves one vital question unanswered. It is: What happens in the case of a dispute as to the facts of a particular event? . . . After all, however good they may be, the instruments which record the events do not get up and speak. What they do is to record data which trained personnel interpret. It is therefore not inconceivable that interpretations may differ. How would a difference of this kind be resolved unless there were in existence some impartial international scientific body acceptable to all the nuclear Powers whose function would be to settle such disputes, if necessary after making such enquiries and inspections as may be considered by it to be essential?[43]

Thus, effective on-site inspection is seen as an important supplement to distant monitoring if there is to be assurance that underground nuclear explosions can be identified as such. Out of this issue rose the recent United States-United Kingdom proposal for an agreement banning tests, without special inspection arrangements, in the atmosphere, in outer space, and under water, as an alternative to an inspected ban on all media. Earlier this issue inspired the dispute over the number of inspection visits to be permitted. Until the Soviet Union repudiated entirely the scheme on which the negotia-

[42] ENDC/PV.8, 23 Mar. 1962, p. 12.
[43] ENDC/PV.13, 2 Apr. 1962, pp. 6-7.

tions had been focused, one of the key divisive issues was Soviet insistence that no more than three on-site inspections should be allowed each year. The Western powers insisted on a higher quota. At first they demanded a fixed number of twenty and then proposed an alternative formula providing for a quota of twelve inspections or, up to a limit of twenty inspections, 20 per cent of "the number of underground events" above the threshold seismic magnitude roughly equivalent to a 20-kiloton explosion.[44] For the past year the Soviet Union has refused to consider this compromise. More recently, the Western powers have indicated a willingness, in the light of newly evaluated Project Vela data, to settle for fewer on-the-spot inspections.

Unfortunately, there is not much ground for optimism in the publicly available evidence as to the effectiveness of on-site inspections as a means of identifying small underground detonations. For identification to take place, several very difficult steps must be successfully negotiated.[45] Aerial surveillance, employing various technical devices, must first narrow down the area in which the unidentified event is suspected to have occurred. Then, ground teams must try to locate the area more precisely, "hopefully within a circle of about 500 feet in diameter." This is an optimistic estimate of what can be achieved. Finally, deep drilling operations must be undertaken to attempt to discover evidence of subsurface "radioactive fission products as positive evidence of a nuclear detonation." Such drilling is costly. In hearings before the Congressional Joint Committee on Atomic Energy in 1960, it was estimated that it would cost $378,000 once the equipment was in place to achieve 100 per cent coverage (63 holes) in the search for an explosion of 1.7-kiloton yield at a depth (1,200 feet) too low to have left surface evidence

---

44 See the comments of Brennan and Halperin on the difficulty of evaluating the effective difference between three and twenty on-site inspections, in Brennan, *op. cit.*, p. 265.

45 The following technical information comes from U.S. Congress, Joint Committee on Atomic Energy, *Technical Aspects of Detection and Inspection Controls of a Nuclear Weapons Test Ban: Summary Analysis of Hearings, April 19, 20, 21 and 22, 1960* (Washington: GPO, 1960), pp. 13, 48-49.

of the explosion. A comparable search for a 20-kiloton explosion would involve drilling a smaller number of holes (10) far deeper (2,700 feet) at an estimated cost of $135,000. It would cost $94,000 to drill for a 100-kiloton explosion (4 holes, 4,700 feet). Another way to view the problem is in terms of the probability of discovering the radioactive zone, within a predetermined 500-foot radius, with fixed numbers of drill holes. The results look like this:

Yield (kilotons)	*5 holes*	*10 holes*
	Probability of discovery	
1.7	3%	12%
20	26	94
100	100	100

These estimates, predicated on relatively favorable terrain conditions, suggest that larger explosions pose relatively fewer difficulties of identification than smaller ones, but that the latter may be very difficult indeed to identify. In denser ground, which would limit the explosion effects more, a larger number of holes would be necessary to achieve the same results.

More recent examination of the problem suggests that improved detection techniques and improved strategies for deploying detection devices may reduce the number of unidentified underground explosions. While some requirements for an effective inspection system may thus be reduced, it does not seem that these advances alter substantially the basic considerations concerning identification requirements. The problem is limited, in any case, to a small number of zones of high earthquake activity. Presumably, distant monitoring has no difficulty identifying the country in which such suspicious events occur.

Different considerations may apply to atmospheric or outer space explosions or a great many other activities that might be prohibited or limited by arms agreements. With wider dispersion of nuclear and missile capability, it may some day become important to be able to identify precisely both the nature and the source of events that appear to violate prohibitions on activities in the atmosphere or space. If the great

powers are determined to enforce such prohibitions against other states, enforcement should pose no great difficulty, provided a basis has been laid for obtaining reliable evidence to identify violations when they occur.

Inspection of Disarmament or of Armaments?

One contentious issue has been whether inspection should be limited to supervision of actual reductions of arms or whether, in the words of the United States outline of provisions for a treaty on general and complete disarmament, "verification arrangements" would be "necessary to ensure throughout the disarmament process that agreed levels of armaments and armed forces were not exceeded." The issue is sometimes defined as the question of "control of disarmament or over armaments." "Control over armaments" is the description given to the United States proposals by Soviet representatives who excoriate it as a "legalized system of international espionage."[46]

The United States representative to the Eighteen-Nation Disarmament Conference, Arthur Dean, stated the principle that "it is the nature of the obligation that determines the type of control which is necessary."[47] This is a useful standard because it allows discrimination between arms limitations which do not require inspection beyond what is necessary to observe that agreed actions have been taken, and those which require more than that.

The first category is a limited one comprising commitments to destroy fixed numbers or quantities of armaments, if such reduction is irreversible. An obligation, for example, to destroy a number of tanks or warships or aircraft clearly fits this category; once destroyed, the weapons are gone. The only requirement for assurance that the obligation has been fulfilled is the opportunity to observe whether the weapons have indeed been done away with.

---

[46] Statement by Soviet representative Zorin, in ENDC/PV.26, 24 Apr. 1962, p. 21. See also his statement in ENDC/PV.21, 16 Apr. 1962, p. 31.
[47] ENDC/PV.23, 18 Apr. 1962, p. 14.

Other types of limitations demand more far-reaching verification. When reductions are calculated as proportions of forces existing at the outset of the process, confirmation that obligations are being fulfilled requires verification of the original force levels as well as verification of the level of forces remaining after the reduction. When forces are reduced to fixed levels, confirmation that obligations are being fulfilled requires verification that remaining forces do not, in fact, exceed the established levels. Both these examples involve verification not only of what has been eliminated but also of what remains. It is difficult to understand how one can reasonably quarrel with this assessment of inspection requirements if what is sought is indeed, as Soviet officials have frequently reiterated, "the necessary guarantees that the disarmament obligations that have been agreed upon will be strictly carried out."[48] Yet the USSR seems to deny this simple and unavoidable logic.

The same considerations apply also to measures to reduce or eliminate specified activities, such as production of materials of war. The only way to ensure that such obligations are being fulfilled is to verify; often that will involve inspection to make certain that activities which have been reduced or eliminated are not replaced by others begun elsewhere.

It is thus not difficult to identify the limitations that imply a necessity to inspect remaining capabilities as well as those that have been eliminated; ongoing processes, as a class, fit this category.

Inspection as a Threat to Security and Stability

One of the charges Soviet representatives like to make is that the United States presses its demands for inspection because it is interested in information about Soviet strategic targets. Again and again the Soviet delegates to disarmament conferences and to the United Nations stress the theme that, to quote Mr. Zorin:

[48] See Mr. Gromyko's statement quoted in note 14.

From such control, which essentially is not control over disarmament but control over armaments, the only ones who would gain would be those who are fostering aggressive plans, who are interested in developing intelligence activities in order to obtain information about the vital centres and defence system of a country which they regard as a potential enemy.[49]

Secretary Rusk, in a very effective and convincing speech to the Eighteen-Nation Disarmament Conference on 23 March 1962, refuted the Soviet arguments that the United States-United Kingdom inspection proposals of April 1961 were designed to make possible espionage against the Soviet Union. He emphasized that the Western plan had been supported by the Soviet Union in its essentials until the USSR reversed its position, and he went on to analyze the contemplated inspection arrangements in some detail. These provided for fixed control posts at sites approved by the USSR. One-third of the technical personnel and all of the auxiliary personnel for these posts would be Soviet citizens. On-site inspection teams would visit sites predetermined by seismographic recordings, using Soviet transport, carrying specified equipment, and accompanied by Soviet observers. The inspected areas, Mr. Rusk pointed out, could at most total annually one part in 2,000 of the total Soviet area. Aerial sampling flights would employ Soviet aircraft and crews and have Soviet observers aboard.[50]

However, there can be no doubt that the purpose of inspection is to provide information, and inspection of some of these limitations would no doubt supply information of some strategic importance. Limitations on numbers of strategic missiles, for example, would involve inspection of launching sites to ensure that the total number of missiles deployed did not exceed the number permitted. Measures to reduce the risk of surprise attack would also require precise knowledge about strategic deployment. The range of meas-

[49] ENDC/PV.26, 24 Apr. 1962, p. 28.
[50] ENDC/PV.8, 23 Mar. 1962, pp. 14-15.

ures involving inspection access to important military information is quite large, but if arms limitations are to be inspected this is unavoidable, indeed desirable.

Still, this necessity invokes some risks. At the core of the problem lies the fact that having or not having accurate information about the location of strategic capabilities is an important factor in the strategic relationships of the great powers. It is widely admitted that the Soviet Union has more such information about United States capabilities than the United States has of Soviet capabilities. There is reason to believe that the Soviet Union has relied heavily in the past and may still rely on the advantage its greater secrecy has given it as insurance against United States superiority in nuclear weapons. No matter how many more aircraft and missiles the United States may have, if it does not know where the Soviet targets are it cannot hit them. In this sense secrecy may be a stabilizing factor: not only does it limit the ability of the United States to take advantage of its superiority to launch a first strike but, to the extent the USSR believes its secrecy protects it, Soviet fears are relieved. The risk of mutual pre-emption is thus considerably reduced.

Secrecy is only one factor providing protection against enemy attack. Another is the hardening and dispersal of missile sites, as is being done with the United States Minuteman missile force. Air alert for bombers is one more. As the United States has become increasingly aware of the requirements of stable deterrence, it has greatly diminished the vulnerability of its strategic forces to enemy attack and is commited to continuing this process and improving on the progress already made. There is some evidence that the Soviet Union, too, may be moving in the same direction. There was a recent report that the Soviet Union had installed its first hardened missile, although the above-ground concrete "coffin-type" casing that was described is still a long way from the intricate underground silos which house late generations of United States missiles.[51] If these trends continue,

[51] *The New York Times,* 26 July 1962.

the effect may well be to diminish significantly the importance of secrecy as a safeguard against enemy attack.

Furthermore, secrecy may be a diminishing asset as maintaining it becomes less and less possible. The United States U-2 flights apparently collected a great deal of information about Soviet strategic capabilities and production facilities. A good many unidentified space satellites have been orbited by the United States and it is likely that at least some of them are Samos satellites, able to perform many significant reconnaissance functions. It is fortunate, in terms of the stability of mutual deterrence, that space satellites may be more useful in identifying fixed installations, thereby providing long-term or strategic intelligence, rather than tactical up-to-the-minute targeting information. However, they should be very useful in providing evidence of cumulative changes in the strategic dispositions of the countries being surveyed. Thus, it may be that national intelligence activities will succeed in eliminating or vastly reducing the value secrecy now has, although this trend may be limited by the growing reliance on nuclear delivery systems such as the United States Polaris submarines and Soviet missile-launching submarines that achieve secrecy by mobility.[52]

How valuable secrecy is or what risk is posed by arrangements to inspect strategic facilities depends very much on what the parties already know about each other's military dispositions. It is possible, but not very likely, that the USSR knows less about United States strategic dispositions than is commonly believed; it is possible, and perhaps more likely, that the United States already knows a good deal about those of the Soviet Union. Obviously, assessment of these considerations has to take into account the over-all strategic balances, the general relationships between the parties, their intentions toward each other, and other variables not subject to precise measurement.

52. It was recently reported that Western experts believe the new Soviet atomic fleet "is now equipped with underwater launching devices similar to those that fire the United States' Polaris missile." See *ibid.*, 30 July 1962.

The United States proposals for general and complete disarmament acknowledge the seriousness of the problem posed by secrecy. The United States has proposed a scheme for zonal inspection that would enlarge the total area under complete inspection to keep pace with the amount of disarmament already undertaken.[53] It would limit incursions on the secrecy of Soviet installations in the zones not yet subject to full inspection. Whatever secrecy there was as to military capabilities in such zones would remain unaffected by the zonal inspection arrangements, since inspection would cover only disarmament and not remaining capacity. Presumably, over-all armaments and, hopefully, tensions and risks would diminish as the area subject to full inspection increased.

Sampling as an Inspection Technique

Random sampling is an accepted technique in industrial quality controls, food and drug inspection, and so forth, and its uses in the field of arms control inspection are being intensively explored.[54] The idea behind this is that it is not necessary to inspect everything in order to have high assurance that obligations are being fulfilled and violations are not occurring. Arms control inspection poses the hitherto unencountered sampling problem that potential evaders may seek to "beat" the sampling system. Sampling strategies have to take this possibility into account.[55] In general, however,

---

[53] This ingenious zonal scheme is associated with the name of Professor Louis Sohn of Harvard University. See his chapter, "Phasing of Arms Reduction: The Territorial Method," in David H. Frisch, ed., *Arms Reduction Program and Issues, op. cit.*, pp. 123 ff.

[54] On the general question of sampling's relevance to arms control inspection, see chapter by Solomon, in Melman, *op. cit.*, pp. 225 ff.

[55] This point has been made by Feld, *et al., op. cit.*, p. 21, and by Thomas C. Schelling and Morton H. Halperin, *Strategy and Arms Control* (New York: Twentieth Century Fund, 1961), p. 104. The latter stated the problem this way: "An important difference between ordinary statistical sampling, and the use of sampling against an intelligent adversary, is that the activities being monitored may adapt themselves to the sampling procedure that is chosen. If there is a limit, for example, on the number of samples that can be taken within a given month or a year, and the limit has been exhausted, violations may proceed with impunity until the next period begins; . . . the party being examined . . . may deliberately create suspicious evidence in order to exhaust the sample."

the theory is that if a sample can be inspected, perhaps chosen on a random basis, then the fact that inspection reveals no violations in the inspected facilities can be taken as evidence that violations are not likely elsewhere. Discovery of a violation in the selected sample would, of course, send up danger signals. The probability that well-designed sampling would enable inspection to uncover violations should, it is urged,[56] be high enough to make a potential violater sufficiently uncertain of success to be deterred from trying.

The territorial inspection scheme proposed by the United States, although it does involve elements of sampling, is not clearly a scheme for random sampling. The United States proposals spell out few details and say only that the parties would divide their territories "into an agreed number of appropriate zones" and submit declarations "stating the total level of armaments, forces, and specified types of activities subject to verification in each zone." Then, an agreed number of zones would be progressively inspected, the ones to be inspected being chosen "by procedures which would ensure their selection by Parties to the Treaty other than the Party whose territory was to be inspected or any Party associated with it." Once the zones to be inspected had been chosen, the country to be inspected would give details as to the location of the forces, armaments, or activities to be inspected. Arrangements would be necessary to prevent undeclared movements across zonal boundaries. The inspectors, obviously, would seek to verify that the declared objects or activities were where they were supposed to be and that there were none that did not appear on the declared list. Under this scheme, the governments of the countries inspected would have control over the process of defining the zones in their countries and would, no doubt, seek to do so in ways that maximized their own security in terms of the options available. The plan does not specify whether the selection of the zones to be inspected would be random or not (drawn out of a hat, for example). It thus leaves open the possibility that

[56] See, for example, the chapter by Wiesner, in Henkin, *op. cit.*, pp. 123-125.

governments with advanced intelligence resources would seek to influence the choice of zones in ways that would ensure that inspection efforts served their interests to the greatest extent possible. However it should be done, this scheme seems a promising step toward coping with the problem that too much inspection information about strategic facilities, at least in present circumstances, might be de-stabilizing, or, just as important, appear to be. Such a sampling technique also offers promise of reducing the costs of inspection.

The sampling method, in this case applied geographically, has obvious relevance to other criteria for defining inspection tasks. If factories producing certain objects have to be inspected, it may be possible to achieve highly reliable inspection without inspecting all of them. Similarly, with regard to performance of obligations to reduce force levels or armaments, some sample units or depots could be inspected. In such cases something akin to the procedure proposed by the United States for zonal inspection would have to be followed. Declarations of total force and armament levels or of production facilities would have to be submitted. And where delicate deterrent relationships would not be affected, precise statements of locations and levels of activity in each facility or installation might have to be provided. Then a selected sample would actually be inspected, and the conformance or non-conformance of the observed facts with the declared state of affairs could be established. Depending on the nature of the activity being inspected provision would have to be made to avoid transfer of forces, armaments, or activities from one place to another. The sampling scheme in some cases might have to provide for sampling inspection of undeclared facilities as well—factories that are not listed as producing prohibited or regulated items, for example. Sampling may thus be appropriate for a wide range of prohibitions or limitations. Presumably, the principle of the United States zonal scheme should be maintained: while only a selected number of installations or facilities would be inspected initially, all would be eligible for inspection to permit the sampling to be done among the entire range of relevant objects

of inspection and to permit follow-up inspection if the sample inspection should reveal violations or uncover ambiguous information.

Tactical vs. Strategic Measures

If inspection is to be depended on for tactical or short-term warning as distinguished from strategic or long-term warning, the technical difficulties and costs will be great. Moreover, tactical knowledge may, for reasons that are apparent from the above discussion of the relationship of inspection to strategic stability,[57] jeopardize the security of strategic forces on which mutual deterrence may depend. Jerome Wiesner has referred to general agreement "on the desirability of limiting inspection and observation systems to those of a strategic nature—that is, those that monitor only such factors as location, numbers and quality of forces and weapons," and on avoidance of a system that depends upon tactical information requiring rapid transmission and quick reaction.[58] Elsewhere, Mr. Wiesner has made clear that this consideration applies to arrangements such as those at one time proposed for reducing risks of surprise nuclear attack.[59] Any such measures would depend on high speed and very reliable communication and data processing systems. If military dispositions of the parties were very dependent on the reliability of such systems, the systems would have to be very reliable indeed. Furthermore, Mr. Wiesner argues that the inspection force needed would be as large as that required for general and complete disarmament. In proportion to the advantages of such a system, its costs would be very high.

Obsolescence of Inspection Arrangements

Time has important effects on inspection requirements. One of the most perplexing of all arms control questions is

---

[57] See pp. 45ff.

[58] "Inspection for Disarmament," in Henkin, *op. cit.*, p. 114. *(C)* 1961 by The American Assembly, Columbia University, N.Y. Reprinted by permission of Prentice-Hall, Inc.

[59] In Brennan, *op. cit.*, p. 208.

how to avoid obsolescence of the inspection arrangements. The problem arises, in one form, in the interval between the time a particular inspection need is identified and when the appropriate arrangements can be agreed upon and put into effect. Recent experience with arms negotiations suggests that such intervals are more likely to be long than short.

Perhaps the most striking example of the obsolescence effect was the nuclear stockpile problem. By 1955 it became clear that the amount of nuclear material in existence had eliminated the possibility of highly reliable controls of nuclear stockpiles. At best, inspection arrangements would involve a margin of error and, with so much material in existence, that margin of error implied too great a residual stockpile to be accounted for with certainty. The basic assumptions underlying the negotiation of arms arrangements shifted radically as governments came to acknowledge this fact. The dramatic turning point was the Soviet proposal of 10 May 1955, which said

> there are possibilities beyond the reach of international control for evading this control and for organizing the clandestine manufacture of atomic and hydrogen weapons. . . . The security of the States signatories to the international convention cannot be guaranteed, since the possibility would be open to a potential aggressor to accumulate stocks of atomic and hydrogen weapons for a surprise atomic attack on peace-loving States.[60]

As a result, negotiations focused on ways of arriving at partial measures of arms limitation until the Soviet Union again reverted to pressing for general and complete disarmament.

There is no obvious answer to the problem posed by technological and circumstantial changes that occur between the time inspection measures are conceived and the time they are put into effect. Nor, as has already been suggested, can it be predicted whether these changes will make the task of inspection easier or more difficult.[61] While the nuclear stockpile

---

[60] U.S. Senate Foreign Relations Committee, *Disarmament and Security: A Collection of Documents, 1919-1955, op. cit.*, p. 389. Bechhoefer has an excellent description of the effect of this phenomenon in the negotiations. See *Postwar Negotiations for Arms Control, op. cit.*, pp. 242-258.

[61] See pp. 22-23.

example suggests that change can make inspection more difficult, the corollary multiplication of nuclear weapons has led to relatively stable strategic relationships that may lessen the burdens inspection arrangements have to carry. Perhaps all that can usefully be said about this problem is that the probability of significant changes affecting the inspection requirements has always to be borne in mind. The hazard that negotiators may be pursuing inspection arrangements which have already been rendered obsolete by technological and circumstantial change is another factor complicating the negotiating process and making it inordinately difficult to reach satisfactory agreements.

Of course, the problem does not end with the institution of inspection arrangements. The latter risk obsolescence just as much after they have been put into effect as before, assuming that complete disarmament, including an effective prohibition on arms research, has not been instituted. To this problem two responses seem relevant. One is to incorporate provisions to make modification of inspection arrangements possible in agreements setting them up. This has been done in the latest United States-United Kingdom draft treaty proposed for a complete nuclear test ban, which provides for periodic review of the system (Art. XI).[62] No such specific provision is made in the latest United States draft outline for a general and complete disarmament treaty, although the notion of periodic review is by no means excluded.[63] The Soviet plan for general and complete disarmament seems at least to leave the question open in the provisions vesting in the Conference (Art. 41 (3)) and the Control Council (Art. 42 (g)) general authority with respect to the control procedures.

[62] United Nations Doc. A/5200, 18 Sept. 1962 (ENDC/58, 27 Aug. 1962).

[63] In fact, an obligation to keep the system under review at each stage is implied in the proposed commitment "to ensure that the International Disarmament Organization would have the capacity to verify in the agreed manner the obligations undertaken." The words "in the agreed manner" may suggest a rather more static approach than is implicit in the obligation to ensure the Organization's "capacity to verify." The language applying to the first stage is slightly different from that quoted, but seems to have the same effect.

Another response is to ensure that the international control agency has up-to-date scientific and technological competence, adequate to enable it to appraise the inspection arrangements realistically in the light of changing science and technology relevant to arms. Of course, member governments which themselves have advanced scientific and technological capabilities can introduce evidence as to needed changes in the decision-making organs of the control agencies. Such a procedure seems definitely contemplated in the review provision and other provisions of the most recent United States-United Kingdom draft treaty for a complete test ban. The earlier United States-United Kingdom proposal, advanced in April 1961, seemed also to envision an active role by the Administrator and the staff of the organization. In that draft the Administrator was required to

> develop and arrange for the execution of a program of research and development for the continuing improvement of the equipment and techniques used in all components of the System, and . . . from time to time make recommendations to the Commission regarding improvements to be incorporated in the System. [Article 9 (5).]

The August 1962 proposal vests comparable responsibility in the Commission rather than the staff, although the staff is supposed to "assist the Commission in carrying out its functions" (Article V). While the United States draft outline of the general and complete disarmament treaty contains no such provision, it does charge the Administrator with "making reports to the Control Council on the progress of disarmament measures and of their verification, and on the installation and *operation* of the verification arrangements" (italics added). The power to report is the power to raise issues for consideration. The Soviet proposal gives no such authority to the staff.

Clearly, there can be no guarantee that agreed inspection systems will be modified to conform to changing needs, whether the needed adaptations involve refinements, or improvements within the limits set by the basic agreements, or amendments in the basic instruments themselves. On the

contrary, effecting such changes will always be problematical, since in international affairs, altering the *status quo* by agreement is the most difficult of enterprises. Such changes, moreover, are unlikely as a rule to have symmetrical effects; some countries are more likely to be inconvenienced by the proposed changes than others, and some to have greater interest in bringing about the changes.

Thus, the decision to effect change is likely to be a partisan, warmly contested, political matter. Governments will determine their positions by assessing the relevant advantages and liabilities. Political costs of failure to acquiesce in measures to improve inspection systems might be one consideration. But proving to the politically relevant and significant audiences that any proposed change is essential, and that in its absence the system would be inadequate, may not be an easy thing to do. For one thing, the technological considerations, if recent experience with the test ban negotiations is any indicator, are unlikely to be clearcut. For another, some of the circumstantial changes leading to the need for changes in the system may not be technological, but political, or strategic, or economic, and getting agreement on the implications of such changes may be even more difficult.

What will count most in bringing about change will be the determination of the principal parties to demonstrate to each other that they are interested in preserving and developing the arms control system. However, unless the conditions requiring changes in the system are very apparent and very central, they may not, for reasons already given, pose very clearcut tests of the parties' intentions. Since this is the realm of psychological communication, the interpretation of evidence will undoubtedly be difficult and will seldom result in unmistakable conclusions. In cases of extreme weaknesses in the system resulting from technological or other change, the parties can always assess whether the inadequacies outbalance the advantages the system offers. The threat to withdraw from the system, or actual withdrawal, are sanctions available to states intensely interested in bringing about improvements in the inspection arrangements. How-

ever, for reasons spelled out in earlier sections of this paper, resort to these sanctions will be, at most, infrequent.

Preparations to Violate

Time enters the process in another way. Time may be the most precious asset to be derived from inspection. When there is a violation it is time that permits governments to institute ameliorative measures. In this connection, it is on balance helpful to the victims that there is a long road from the drawing board to an effective military capacity. If a new scientific discovery is involved, or a new weapon design, the chain of events leads through blueprints and engineering designs, prototype production and testing, design and engineering of the production layouts, plant construction (which will pose special difficulties under the circumstances of an arms agreement), development of doctrines for the employment of the weapons, production of enough weapons to achieve a decisive effect, training of personnel, to actual deployment of the finished systems, which might, in some cases, involve complex installations. Violations can begin at any point in this schematic chain of events. But even efforts to violate restraints on existing weapons systems imply chains of preliminary measures before a decisive military advantage can be deployed or demonstrated. The other side of this coin, however, is that once a critical military advantage is achieved by violation of an arms agreement, the victims confront a comparable chain of requirements before they can redress the balance by equivalent means. The victims may gain some advantage vis-à-vis the violator from their ability to respond overtly. Nevertheless, should a violator achieve a decisive military advantage, the victims' security would be endangered and peace would be threatened.

It would appear, therefore, that the further back in the chain of violations inspection can be effectively initiated, and the more points at which inspection efforts are made, the better will the system be. The obvious question, therefore, is whether preparations to violate cannot themselves be prohibited.

This issue arose in acute form with respect to the moratorium on nuclear tests. When the Soviet Union resumed testing on 1 September 1961, President Kennedy several times expressed concern over the advantage that country had gained by testing after a long period of secret preparation. In his press conference on 7 February 1962, the President referred to the need for "methods of inspection and control which could protect us against the repetition of prolonged secret preparations for a sudden series of major tests."[64] Subsequently, in his radio-television address of 2 March 1962, the President, referring to the proposals the United States and the United Kingdom would introduce in the Geneva negotiations, said that "new modifications will also be offered in the light of new experience,"[65] thus giving rise to speculation that the United States would propose new measures to prohibit preparations for testing. In the event, no such proposals were made, no doubt because of the difficulty of defining preparations for the purpose of such a prohibition, and because such a prohibition would involve inspection arrangements even more onerous than those which it had already proved difficult to negotiate with the Soviet Union.

In theory it should be possible both to incorporate in arms agreements limitations on measures antecedent to the actual production or deployment of prohibited weapons and to make arrangements to inspect such measures. Such secondary limitations, however, might operate to the disadvantage of states that fulfill their obligations, since successful violation of secondary prohibitions would have a bigger payoff than would violation of the primary prohibitions alone. The continued existence of research and production facilities and stockpiles of weapon components would enable the victims of violations to take compensatory steps more rapidly than would be possible if all such secondary capabili-

64 U.S. Arms Control and Disarmament Agency, Disarmament Document Series No. 57.

65 "Nuclear Testing and Disarmament," U.S. Arms Control and Disarmament Agency, General Series No. 2, Mar. 1962, p. 17.

ties had been eliminated. However, freedom to maintain the secondary capabilities might also operate to the relative disadvantage of the Western countries, which probably find it more difficult than totalitarian countries to maintain stand-by facilities and crews, especially of scientists and technical personnel.[66] Of course, the existence of inspected secondary prohibitions would offer more opportunities to detect steps leading to primary violations than would otherwise be available.

Taking the several factors into account, therefore, it might seem desirable to move toward agreements that prohibit not only the production and deployment of weapons, but also those secondary measures which lend themselves to reliable inspection. As the scope of arms agreements broadens, so will the scope of the inspection arrangements and the number of inspection tasks to be performed. The existence of a major network of interacting inspection techniques and capacities should make it possible to extend the reach of the system to include such secondary measures as stockpiling of critical components, testing of prototypes of prohibited weapons, training of personnel, tooling up of facilities for production of prohibited weapons, and preparation of weapons sites.

The key to successful performance of these inspection functions will be the identification of those critical secondary measures that have utility only in connection with the prohibited primary act or in some other way give unmistakable evidence of an intention to violate an established primary prohibition. This will be a formidable task and, in view of the difficulties of distinguishing among the uses

[66] President Kennedy referred specifically to this problem: "Some may urge us to try it [an unrestricted moratorium on nuclear tests] again, keeping our preparations to test in a constant state of readiness. But in actual practice, particularly in a society of free choice, we cannot keep topflight scientists concentrating on the preparation of an experiment which may or may not take place on an uncertain date in the future. Nor can large technical laboratories be kept fully alert on a standby basis waiting for some other nation to break an agreement. This is not merely difficult or inconvenient—we have explored this alternative thoroughly and found it impossible of execution." *Ibid.*, p. 18.

of component parts, of plant capacity or even of installations under construction, may prove impossible in most cases. Moreover, such an inspection effort would, without doubt, involve a major technical capability on the part of the inspection agency, large numbers of highly skilled personnel, and extensive rights of access to the terrain and into the economic and even social fabrics of the countries being inspected. Such a system might well require freedom of access to industrial and business secrets and this might be unwelcome even in open societies. Inspection of secondary prohibitions would be technically feasible only if extensive primary prohibitions and inspection facilities had been agreed upon.

Even in such circumstances many types of relevant secondary activities could not be prohibited because they could not be meaningfully inspected. Research on new weapons systems, for example, covers activities that range from the scientist thinking in his study or penciling notations on the back of an envelope to highly organized group efforts at systems research employing large computing machines and other elaborate equipment. Activities at the latter end of the scale might perhaps be monitored. Creative research, however, should not be controlled and probably cannot be in any case. How can an inspector distinguish between an idea that will benefit humanity and one that will result in violating an agreed arms limitation? The more basic the research the more likely it is that one idea can serve both goals. Even the same space satellite can serve peaceful and warlike purposes. How is it then possible to differentiate between engineering designs or, for that matter, component parts which are intended to make possible an evasion of an arms limitation, and those which are not? It is apparent that efforts to restrain secondary activities will encounter severe limits and will be feasible only within fairly narrow confines.

For the time being, therefore, it appears that no major efforts should be made to enforce secondary prohibitions, since the technical and political conditions for such efforts do not exist. Moreover, the ability to conduct secondary ac-

tivities may, for some time to come, be a needed reassurance to governments that they will be able to respond appropriately to violations of primary prohibitions by other governments.

Complete vs. Partial Prohibitions

It seems likely that, in most circumstances, total prohibitions will be easier to inspect than partial ones and evidence of violations easier to interpret. The difficulty of discriminating between what is permitted and what is prohibited is thus eliminated, or at least reduced.[67] Moreover, to discover a small number of prohibited items or the small-scale performance of a prohibited activity is to discover clear evidence of a violation only when the item or the activity has been totally prohibited. In general, the task of inspection will be facilitated by the clearest and most complete possible definition of what regulations are agreed upon. If the likelihood of friction in the implementation of arms agreements is to be kept to a minimum, most arms agreements will have to be lengthy and complex documents.

Interaction Effects

The reliability of inspection arrangements can often be increased by bringing to bear the mutually supporting potentialities of the various appropriate techniques. Consider, for example, a prohibition of further production of vehicles for delivering nuclear warheads. The primary means of inspecting such a limitation would be physical inspection of plants known to have the capability to produce such weapons. This technique might be reinforced by efforts to keep track of the activities of personnel known to have experience in such production, by checking on inventory records of critical

[67] Even total prohibitions may not eliminate grounds for disagreement as to what is permitted. Does a prohibition on delivery vehicles include a prohibition on manufacture of components? On launching pads? On missile research? On training missile crews? For a suggestive analysis of this general problem, see Schelling and Halperin, *op. cit.*, pp. 109-113.

components of the weapons[68] and of major machine tools needed for such production, by seeking to detect check-out tests of completed or nearly completed vehicles,[69] and by aerial and perhaps space-based surveillance to detect large-scale production activities and unusual movements of critical supplies or components to or from areas known to be pertinent to the prohibited production. Not all of these techniques would be equally relevant and there may well be others that have not been listed. Other kinds of limitations would obviously require different techniques. To control a prohibition of nuclear materials production, for example, might involve monitoring electric power usage, since electrical power is an important component of such production.

The decision as to what particular conformation of inspection techniques to employ in any instance would have to reflect the technical necessities and opportunities, judgments as to how high must be the assurance that violation will be detected, cost calculations—both of money and human resources—and the relative political difficulty of working out the various possible arrangements. However, the principle that the degree of achievement of the several goals of inspection is likely to increase with the number of alternative means of inspection is an important one since the more different kinds of limitations are being supervised, the more different techniques of inspection will be in use and thus available for cross-checking. A careful student of inspection problems has pointed out that "in proportion to the invested effort, it is much easier to keep score on *all* kinds of weapons than on a few very special kinds."[70]

Mr. Wiesner has noted that "the interaction of the various inspection systems would make up for the uncertainty per-

[68] These are components that are either "especially characteristic of" the object being controlled, "especially difficult to produce or both." See chapter by Phelps, in Frisch, *op. cit.*, p. 110. Phelps does not believe inspection of critical components is a very significant technique because of the relative ease with which they can either be dispensed with or substituted for.

[69] Phelps points out that this may become a decreasingly significant focus of inspection, as production techniques for tested vehicles become more routine and as the vehicles themselves become more reliable. See Frisch, *op. cit.*, p. 111.

[70] Phelps, in Frisch, *op. cit.*, p. 87.

mitted by any one."[71] Moreover, Mr. Wiesner has pointed to the opportunities this principle offers—when it is possible to exploit the interaction effects of inspection techniques appropriate to a range of different arms limitations—to economize on the total effort needed to achieve desired levels of confidence in inspection. It should be recognized, however, that this principle tends, as John B. Phelps has recognized, to contradict the argument that progress in arms reduction can best be made by singling out individual measures that lend themselves most readily to agreement.

[71] In Henkin, *op. cit.*, p. 115.

The Organization of Inspection

MUCH OF THE CONTROVERSY over arrangements for international inspection of arms regulations has focused on the organizational features: whether, for example, inspection should be "international" or "national," and whether inspecting and control organization staffs should be "impartial" or should, as the Soviet Union has proposed, reflect what they call the world's division into "camps." Inescapably, governments have had to be concerned with the implications for other international organizations of decisions concerning the projected international control agencies. The issues have been confused further by the failure to distinguish clearly between the arms control functions on the one hand, and the development of measures for the maintenance of international peace and world order, as armaments diminish, on the other. It is especially important to differentiate between the requirements of arms regulation in the early stages and the requirements that would be generated should there be major national disarmament.

Reciprocal vs. International Inspection

For historical reasons, negotiations on arms regulations have until lately been concerned exclusively with proposals for multilateral agencies and multilateral inspection arrangements to superintend the process of national disarmament. Late in 1961 the Soviet Union reversed its previous acceptance of the principle that a nuclear test ban should be supervised by an international control organization, and proposed instead that inspection be carried on by existing national

means of detection. As a result, the question of national versus international inspection arrangements has received increasing attention. In August 1962, the United States and the United Kingdom introduced a new proposal on the cessation of tests in all media which blends basic monitoring by national means with a superimposed international control agency that is to have some direct monitoring capabilities and guaranteed access rights for on-the-spot inspection. The United States-United Kingdom proposal is a response to a memorandum submitted by the eight so-called "uncommitted" participants in the Eighteen-Nation Conference in Geneva on 16 April 1962.[72] The new proposal, however,

---

72 Brazil, Burma, Ethiopia, India, Mexico, Nigeria, Sweden, and the United Arab Republic. The relevant paragraphs of their statement are as follows:

"3. They believe that the possibilities exist of establishing by agreement a system for continuous observation and effective control on a purely scientific and non-political basis. Such a system might be based and built upon already existing national networks of observation posts and institutions, or if more appropriate, on certain of the existing posts designated by agreement for the purpose together, if necessary, with new posts established by agreement. The existing networks already include in their scientific endeavours the detection and identification of manmade explosions. Improvements could no doubt be achieved by furnishing posts with more advanced instrumentation.

"4. Furthermore, the feasibility of constituting by agreement an international commission, consisting of a limited number of highly qualified scientists, possibly from non-aligned countries, together with the appropriate staff, might be considered. This commission should be entrusted with the tasks of processing all data received from the agreed system of observation posts and of reporting on any nuclear explosion or suspicious event on the basis of thorough and objective examination of all the available data. All parties to the treaty should accept the obligation to furnish the commission with the facts necessary to establish the nature of any suspicious and significant event. Pursuant to this obligation the parties to the treaty could invite the commission to visit their territories and/or the site of the event the nature of which was in doubt.

"5. Should the commission find that it was unable to reach a conclusion on the nature of the significant event it would so inform the party on whose territory that event had occurred, and simultaneously inform it of the points on which urgent clarification seemed necessary. The party and the commission should consult as to what further measures of clarification, including verification *in loco,* would facilitate the assessment.

"After full examination of the facts, taking into account any additional data furnished to it as suggested above, the international commission would inform the parties to the treaty of all the circumstances of the case and of its assessment of the concerned event.

"The parties to the treaty would be free to determine their action with regard to the treaty on the basis of reports furnished by the international commission." ENDC/PV.21, 16 Apr. 1962, pp. 21-22.

departs from the eight-nation memorandum in its insistence upon guaranteed access and a provision for an intergovernmental control organ rather than a "non-political" scientific agency as proposed by the eight uncommitted nations.

The various proposals for test ban arrangements no doubt reflect the particular technical problems inherent in an agreement on this subject. But involved also are the basic purposes of inspection, which are relevant to all agreements to regulate arms. The issues can be examined independently of the technical considerations unique to a test ban.

An important question is whether it is always necessary that the arrangements should involve elements of "impartial" collection and appraisal of the inspection data,[73] as distinguished from "reciprocal" arrangements under which the parties inspect each other. The latter are sometimes called "sides inspection." It appears that, if the primary purpose of the inspection arrangements is to provide reassurance to the main parties that obligations are being fulfilled,[74] reciprocal inspection in some circumstances may not only be as good as impartial arrangements but many even offer advantages. For one thing, the world's main armaments problems involve reciprocal relations between the two great power blocs—the Communist states and NATO—and many of the lesser arms problems involve direct relations between two states or groups of states, such as those between Israel on the one hand and her Arab neighbors on the other, and between India and Pakistan. Reciprocal control arrangements, therefore, might apply to those arms regulations which are essentially reciprocal in character.

If certain conditions exist, it is no more difficult to meet the technical requirements for inspection through reciprocal

---

[73] For convenience, such systems will be referred to hereafter as "impartial," although that is a highly simplified description of a range of complex possibilities. On this general subject, see Fred C. Iklé, *Alternative Approaches to the International Organization of Disarmament* (Santa Monica, Calif.: The RAND Corporation, February 1962); Lawrence S. Finkelstein, "The Uses of Reciprocal Inspection," *Daedalus* (November 1962); and Bull, "Two Kinds of Arms Control," *op.cit.*

[74] See pp. 15ff.

arrangements than through impartial ones. The first condition is that the parties be relatively few and organized in sides, as are the major power blocs, although there might be exceptions to this principle.[75] The other condition is that inspection should not require too deep or extensive penetration of the sovereignty or terrain of the parties. If what is involved is intimate inspection of United States electronics companies, for example, or detailed interviewing of United States citizens employed by the Atomic Energy Commission, the people of the United States and the Congress are likely to prefer international inspection teams to teams of Communists. In any case, it seems that agreements that are likely to be negotiable in the early stages of the progression toward general and complete disarmament will not involve deep penetration. Given the existence of these two conditions there is no reason to believe that the difference between impartial and reciprocal patterns of inspection would significantly affect the likelihood of the parties agreeing to whatever inspection facilities may be necessary. Marginally, the reciprocal approach appears to offer some advantage from the point of view of easing the negotiations, since the parties would not have to negotiate about such organizational questions as staffing, budgeting, and voting, which have plagued all the postwar negotiations on disarmament.

In addition, reciprocal inspection arrangements might offer some operational advantages. Since the parties would be employing their own trusted personnel, the hazards of sabotage of the inspection systems, incompetence, and unreliability would be reduced. Governments would be better able to appraise the reliability of the information collected, and there could be no doubt that information collected under the system would be directly and promptly available to the governments.[76] Reciprocal systems might be less vulner-

[75] The Antarctic Treaty provides for a kind of reciprocal inspection among a fairly large number of parties.

[76] This might be arranged also under impartial schemes but the provisions of the April 1961 United States-United Kingdom draft test ban agreement, for example, were somewhat obscure on this score. See Iklé, *Alternative Approaches . . . op. cit.*, pp. 34-35.

able to evasion than impartial systems: the potential violator, well aware of the capabilities of the latter, could not be so certain about the limits of a reciprocal scheme. Moreover, reciprocal arrangements would eliminate reliance on cumbersome and unpredictable multilateral decisions that would necessarily reflect political and other considerations and thereby work to the possible detriment of clearcut decisions about the evidence. The parties to reciprocal arrangements would thus be free to respond to violations without depending on third party judgments. This factor might add significantly to the deterrent effect of the available national responses.

Reciprocal arrangements would have the further advantage of placing the emphasis where it belongs—on the underlying reality that an adversary relationship exists, that the responsibility rests on the parties for reassuring each other that the obligations are being observed, and that there is a mutual interest in continuing the agreement. One consequence might be that the parties would see more clearly their need to negotiate with each other about minor perturbations in the system. Negotiating might be facilitated by the opportunities the direct relationship would offer the parties to avoid public exacerbation of their differences, if they should be so inclined. The existence of formal multilateral channels for considering such matters might make private negotiation more difficult and might, indeed, provide an irresistible temptation to resort instead to partisan advocacy. On the other hand, the reciprocal relationship might sacrifice the advantages of the pressures for accommodation that would no doubt develop in a multilateral forum, although the parties would presumably retain the freedom to seek impartial good offices, conciliation, or mediation.

The fact that inspection is reciprocal does not exclude the possibility that the primary parties might choose to seek third-party support for their positions. For instance, the adversaries might choose to associate others with them in the information collecting effort; or they might reveal or share collected information with selected or with all govern-

ments. In cases where impartial support may be an important factor in strengthening the will of a government to respond to a violation, it would be free to seek such support. Reciprocal arrangements thus would leave more options open to governments and, by doing so, might increase the deterrent effect of the inspection arrangements. Reciprocal arrangements do not necessarily exclude serving the secondary purpose of inspection—to provide evidence about the system's operation to a wide audience—while serving the primary purpose which is to provide the principally concerned governments with the evidence they need to appraise the system's performance in relation to their national interests.

Clearly though, among agreements to limit arms, there will be some impartial systems, either because the objects of control are spread among too many countries to permit a reciprocal system; or because the depth of penetration would be enough to require that the inspection apparatus have an impartial cachet; or because, as in the case of the test ban, some governments are too deeply committed to the impartial formula to permit the adoption of alternatives. Here the basic lessons of reciprocity may still be applicable. Even impartial systems should be designed to permit the principal adversaries to be reassured, and to reassure each other, as to the working of the system and to facilitate the free flow of the most reliable possible information to the governments with most at stake.

To return briefly to the test ban, it should be clear from this analysis that the idea of a reciprocal system is not necessarily undesirable at all. The reverse may be true. The inadequacy of the Soviet proposal for national inspection is not that it provides for a reciprocal system but that the reciprocal system it provides for may not be adequate to permit high assurance that the obligations of the proposed treaty are being fulfilled. That is because it allows for no new inspection facilities beyond existing national inspection resources. In any case, there is reason to doubt whether very great assurance, with respect to underground explosions at least, is achievable at all. Like many other arms limitation

issues, what is finally involved is how much risk the parties are willing to accept. Here the question is whether the risk that the Soviet Union might successfully violate an agreement which prevents the United States from testing outweighs the advantages of having the USSR under the obligations of the treaty with its imperfect but still relevant provisions for detecting violations.[77]

Although there is, this analysis suggests, scope for the operation of reciprocal national inspection systems in the supervision of agreed measures of arms limitation, the international dialogue still focuses mainly on impartial systems. The remainder of this chapter, therefore, will concentrate on some of the organizational problems of the latter.

Impartial Staffs

The backbone of any international organization is its international staff. This is especially true of the staffs of projected arms control agencies, because of the burden the staffs will have to carry in performing the main function of such agencies—providing information about the fulfillment of obligations under the basic arms control agreement. Governments will for some time to come make their own decisions as to whether the structure of obligations and inspection procedures continues to serve national interests and hence to justify their continued participation. The control agencies exist mainly to supply them with the information, supplementing information that may otherwise be available to them, on which such decisions can be based. While the staffs will have important functions in servicing

[77] The editors of *The New Republic* commented as follows on the August 1961 United States-United Kingdom proposals: "In continuing to seek the facade of an international control system, the Administration has, in our view, unnecessarily encumbered US negotiators. . . . The United States has never proposed an international inspection system capable of detecting all Soviet tests, and the possibilities for violation left by a national inspection system do not seem to us to expose the US to greater danger than would the proposed international system." See "Policing a Test Ban," 13 Aug. 1962, pp. 6-7. This editorial places the issues in correct perspective by emphasizing that the difference between what it terms "national" and "international" systems is not what determines the effectiveness of the system.

the systems' organs and in performing the administrative and housekeeping functions that go with any large-scale enterprise, their raison d'être will be the collection and handling of information.

Staff arrangements should be judged by this standard and no decisions about the composition or management of the staffs should be allowed to interfere with the efficient fulfillment of these responsibilities.[78] What does this imply?

It is well to begin with the acknowledgment that the idea of a perfectly clear set of constitutional instructions to the staff for the performance of its inspection duties is illusory. Every effort should, of course, be made to clarify the nature of the inspection task—when, how, and by whom inspection is to be undertaken, and what is to be done with the results. But, in the last analysis, agreed provisions in the basic instruments will be obscure or incomplete; they will certainly not be able to provide for all the changing circumstances with which the inspection arrangements will have to deal. Ambiguous or imprecise instructions will often emanate from the representative organs, among other reasons because the instructions will often have to be couched in language that compromises political differences. Although everything possible should be done to reduce the burden of judgment the staff will have to carry, the place of human judgment in the faithful execution of assigned responsibilities cannot be eliminated.

This last consideration argues for a staff that is not dependent on internal consensus as a basis for the performance of inspection functions. At the top it implies an administrative head able to take decisions within the limits of his authority.[79] This consideration definitely argues against a collegial-type authority that would have to achieve unanimity before issuing instructions to the staff. The Soviet "troika"

[78] This point has been made by Lincoln P. Bloomfield. See his *The Politics of Arms Control, op. cit.*, pp. 19-23.

[79] The United States-United Kingdom proposals of August 1962, to ban tests in all environments, seek to establish such authority for the executive officer of the organization.

proposal, for a collective organ to head the staff of the nuclear test ban control agency, with its built-in veto at the top of the staff organization, might have effectively obstructed action. That this is no unimportant consideration is confirmed by the fact that, under both the United States-United Kingdom draft treaties for a complete nuclear test ban, the head of the staff would have the crucial responsibility of certifying when events had occurred eligible for on-site inspection.

At lower levels, particularly among personnel who would actually be manning the inspection apparatus and conducting the field inspections, the issue is not so clear. For one thing, it follows from what has been said about the role of information vis-à-vis participating governments that there may be something to be said for the idea of accentuating, rather than minimizing, the role of trusted national agents among the inspectors. If governments are going to have to base national decisions on the evidence provided by the inspection apparatus, their judgments would be facilitated by the assurance that personnel on whom they could rely were participating in the collection process and transmitting their evidence, perhaps with critical appraisals attached, directly to their governments. Still, if decisions as to how inspection units are to behave were to depend on agreement among agents of several governments, the risks of stalemate would be too great.

The problem of avoiding stalemate might be solved if an arrangement could be worked out whereby the team or unit leaders, charged with the responsibility for making decisions about the team's or unit's inspection functions, could be impartial civil servants, owing allegiance in the performance of their duties only to their employing organizations in the tradition the League of Nations and United Nations Secretariats have sought to establish. If the key decisions about inspection were known to be entrusted to technically competent, impartial, civil servants, under the authority of an impartial administrator, there would be room for a kind of reciprocal staffing of the inspection units, perhaps by indi-

viduals who are formal representatives of governments rather than members of the international staffs.

A variant of this scheme was actually incorporated by the United States and the United Kingdom in their draft test ban treaty proposed in April 1961. The staff was to be balanced at all levels and *in toto:* one-third of its members would be nationals of the USSR, another third would be nationals of the United Kingdom and the United States, the remainder would be from other countries. Control posts would be headed by nationals of countries other than those in which each post was located, and the scientific and technical staffs of on-site inspection teams in Soviet territory would be composed entirely of British or United States citizens and vice versa. Thus, this ostensibly multilateral, impartial agency would incorporate an avowedly reciprocal provision with respect to staffing arrangements.

The United States-United Kingdom draft treaty followed the general thrust of the United Nations Charter in laying down the principle that:

> The Administrator and the staff shall not seek or receive instructions concerning the performance of their duties from any authority external to the Organization. They shall refrain from any action which might reflect on their status as international officials and employees responsible only to the Organization. Each Party undertakes to respect the international character of the responsibilities of the Administrator and staff and not to seek to influence them in the discharge of their duties. [Art. 9(2).]

At the same time, the proposed arrangements regarding nationality distributions and functions unmistakably implied that some members of the staff at least were to have a national character. This arrangement was bound to lead to confusion and make for real uncertainty among staff members as to how they could fulfill the obligations regarding impartiality.

This amalgam of provisions represented, among other things, a Western compromise with the Soviet insistence on a tripartite ideological distribution in the staff. Western insistence on maintaining the principle of impartiality was no doubt influenced by concern over the implications for the

beleaguered United Nations Secretariat of decisions that might be reached with respect to the nuclear test ban agency. It might be better to acknowledge candidly that national representation is a legitimate and useful function in the staff, provided national disagreement is not permitted to obstruct the performance of the inspection functions. The result might be a staff with two echelons. The first, with the Administrator at the top, should be impartial, composed probably of non-nationals of the major parties. The second should be avowedly national in composition and function, comprising predominantly nationals of the principal parties, but subject to the administrative direction of the impartial members.

A better alternative might be a completely impartial staff, provided adequate arrangements could be made for the unimpeded flow of all inspection data to the participating governments either directly or through their representatives in the collective organs. However, such a staff could hardly be created without including a large number of nationals of Communist countries. Since the Communist countries do not accept the principle of impartiality, the staff would at best be part impartial and part national in its orientation. Thus, a purely impartial staff seems unattainable. Frank recognition of this fact from the outset might help to avoid an obscure situation and could capitalize on the advantages of national representation in inspection staffs in terms of the uses to which inspection information is to be put. The argument that the impartiality of arms control staffs must be maintained because of implications for the United Nations Secretariat is open to question, particularly since at best such impartiality can be only partly fulfilled. In any case, while verbally advocating it in their 1961 proposals for the test ban organization the Western powers actually conceded the principle. The later proposals, advanced in August 1962, do not repeat the complicated provisions regarding nationality distribution. They provide only that consideration should be given to selecting personnel who are nationals of participating states (Art. VI (3)); that personnel should be obtained on as wide a geographical basis as possible (Art. VI(4)); and

that on-site inspection teams should be composed so that territory would not be inspected by nationals of the country which controls it (Art. VIII (10)).

It is clear that the primary purpose of inspection agencies —the supplying of information to governments—would be subverted if decisions concerning the performance of inspection functions were subject to obstruction by veto. This applies to the representative political organs as well as to the administrative staff. However, it should be recognized that the ability to obstruct is a corollary of being a great power. Moreover, other states may often be in a position to obstruct inspection without exercising a formal veto. A state on whose territory an on-site inspection is being conducted, for example, has an ability to obstruct. The difference between a right and an ability, however, while narrow in some ways, is important because of its effect on the reaction of other states to obstructionist tactics.

Vetoes may significantly affect inspection systems in indirect ways. For example, the Soviet Union's insistence on the right to veto the over-all budget for the nuclear test ban organization, whatever its justification, carries with it the capacity to hamstring the inspection functions. The same is true of the veto over the appointment of the chief of the system's staff. The principal powers certainly have an important interest in this appointment. But by refusing to agree to any candidate, any of them might be able to render the inspection system inoperable.

What is significant about such veto rights is that they provide a legal screen behind which non-compliance with the system's obligations may be hidden by any nation having the veto power, if it is so inclined. Although such conduct will be taken as evidence of a nation's intent to obstruct the system and will carry the risk of whatever consequences may seem appropriate to the other parties, much opportunity for obscuring the basic issues will inhere in such veto provisions. The victims might find it very difficult to convince other governments, or even the populations of their own countries, that such tactics, legally permitted under the terms of the

agreements, justify the hazardous responses more obviously appropriate to prohibited acts.

So long as governmental decisions in response to inspection information are not dependent upon collective judgments, it appears to be irrelevant whether or not unanimity is required in decisions of control agency organs about the information collected. Obviously, to the extent that governmental action depends on decisions of international organs, vetoes would interfere. But as has been suggested, such collective decisions are more likely to concern responses to minor violations than to major ones. No collective enforcement measures of any significance are now possible, although, theoretically, minor sanctions not involving the use of force or other drastic measures might be applicable.

On the whole it seems preferable to have the control systems operate to reinforce the pressures on the major powers to reassure each other and to negotiate their minor differences. This suggests that little reliance need be placed on collective decisions, even as to the interpretation of evidence collected by the inspection systems.

In any case, a great power cannot be forced to act against its will. Whether a veto is formally introduced in the proceedings or not, a great power veto will in fact exist. This applies especially to the important decision under the proposals for general and complete disarmament as to whether the obligations of each stage have been fulfilled as the prerequisite for moving on to the next stage. Whatever language may find its way into the final disarmament treaty text, unless the great powers are satisfied that the progression should go forward from stage to stage, no progress will in fact be possible.

Relations With International Organizations

The performance of inspection functions would not be significantly affected by structural relationships between control organizations and the United Nations.[80] The United

[80] On this subject, see Finkelstein, "The United Nations and Organizations for the Control of Armaments," *International Organization*, Vol. XVI, No. 1 (Winter 1962).

States outline for the treaty on general and complete disarmament provides merely that the proposed International Disarmament Organization (IDO) would be set up "within the framework of the United Nations." This vague language permits any of a number of relationships to be created. Assuming no obstructive procedures are introduced, no one relationship seems any more or any less likely than any other to facilitate the performance of the inspection functions.

The arms control organization's relationships with the International Atomic Energy Agency (IAEA) would perhaps be more important. For one thing, IAEA is responsible for "safeguards" with respect to the peaceful uses of atomic energy under the IAEA program that actually involve inspection roles—roles that might be strengthened in the future.[81] Those functions bear a close relation to the functions which an International Disarmament Organization would be performing. While there might be persuasive political or constitutional reasons for maintaining IAEA as a separate institution, and that possibility should perhaps be kept open, nevertheless, it appears that a merger of the two organizations might be desirable at a fairly early stage in the existence of the new agency. For one thing, a joint operation would make possible the most efficient employment of the available technical and, more especially, human resources. Secondly, the new agency is likely to need sorely the experience and expertise IAEA will by then have accumulated. The same considerations would apply should a separate organization to supervise a nuclear test ban come into being before the general disarmament organization.[82]

There is another consideration that various students of these problems have emphasized. The new disarmament agency will have a hard time recruiting and keeping the

[81] See *Report of the Advisory Committee on U.S. Policy Toward the International Atomic Energy Agency* (Washington: U.S. Dept. of State, 19 May 1962).

[82] The latest United States-United Kingdom proposals contemplate such a merger in the provision authorizing the Commission to make appropriate arrangements for the organization to become a part of any international disarmament organization (Art. X (2)).

kinds of highly trained personnel it will require if it can offer them only relatively routine inspection duties.[83] Moreover, the agency will have to maintain an up-to-the-minute knowledge of advances in science and technology relevant to armaments, which will probably require the establishment of advanced research facilities within the agency. In the field of nuclear knowledge, IAEA has constructive responsibilities and research facilities, both of which will no doubt develop progressively over the years. Thus, IAEA's functions in the field of peaceful uses of atomic energy might, if they were incorporated in the disarmament organization, provide partial solutions for both of these problems which IDO is certain to face. IDO's inspection functions would doubtless involve cooperation of various sorts with other international agencies, such as the International Telecommunication Union and the World Meteorological Organization. While closer study of this problem might lead to different conclusions, it seems likely that such needs could be met by cooperation agreements, perhaps in the pattern of the agreements between the United Nations and the specialized agencies.

[83] Finkelstein, "The United Nations and Organizations for the Control of Armaments," *op. cit.*, pp. 17-18, and Feld *et al.*, *op. cit.*, p. 21.

Conclusions

THE THEME OF THIS ANALYSIS has been the tension between two Western conceptions of the assurance demanded of arms control inspection systems. One conception, a minimizing one, emphasizes the desirability of limiting inspection requirements to whatever is needed to ensure that violations of agreed limitations do not pose significant threats to national security and to the balance of mutual deterrence. The second emphasizes the desirability of providing high assurance that obligations are being performed and that violations will be detected whether or not they significantly affect the security of the parties and the balance of power.

Both conceptions accept the basic principle that the disarmament process has to begin with partial measures, leaving relatively intact the present reliance on national military forces to maintain security and the international power balance. Both approaches acknowledge that perfect inspection is not feasible and both seek to reduce risks by maintaining national capabilities adequate to keep within acceptable limits the possible consequences of violation. Both acknowledge the difficulty of reaching agreement on the inspection arrangements that would be required by more far-reaching measures of arms reduction. Both emphasize the advantages of taking such limited steps as can be agreed upon to check or halt the spiraling arms race, to reduce the risks and costs of the arms competition, and to gain experience in operating systems to regulate arms. Both seek to profit from the advantage offered by the possibility of postponing the more far-reaching arms reductions, which will either be facilitated by the growth of international confidence, or failing that,

will pose severe risks and require onerous inspection arrangements.

The two approaches differ in their appraisal of the degree of inspection needed to make possible the partial measures of reduction that both favor. The first approach, which seeks to minimize the demands on inspection, emphasizes national security and strategic stability as the touchstones of arms control systems. In this respect, it may be said to be strategy-oriented; it tends to view inspection arrangements exclusively in terms of these strategic criteria. A system based on substantial remaining national capabilities need not be very sensitive to minor violations because they cannot threaten security and stability. In such a context, the inspection system should be designed to detect major violations. The second approach emphasizes the political character of continuing arms regulation and thus calls for inspection that will assure a greater flow of reassuring information than the first.

There can be no doubt that national security and stable deterrence are the two central ingredients of any arms control system. Any inspection arrangements must satisfy the standards set up by the minimizing approach. However, this approach has shortcomings which need to be weighed carefully.

Limitations of Minimal Inspection

For one thing, there is the implicit Western belief that minimizing the inspection standards in this way makes agreement on first-step reductions more easily negotiable with the Soviet Union. This is a logical assumption to make; the less the system demands, the easier the negotiations should be, and the easier for the parties to accept what is required of them. The trouble is that neither the record of the post-war negotiations nor the Soviet Union's assertions about what it wants supports the hypothesis that that country would accept inspection designed to fit the minimizing standards more readily than the more demanding inspection

of the second approach. In fact, the Soviet Union says it wants neither. Instead it professes to want major disarmament immediately accompanied by commensurate inspection measures. Thus, despite the apparent logic of the minimizing assumption, it has to be assessed as unproven. Nobody except the Soviet leaders, and perhaps not even they, know what they want or would accept when forced to a decision.

Secondly, the underlying assumption of the minimizing approach seems to be that the limits of permissible violations that will not undermine security and stability can be reliably assessed and that minimal systems can be designed to assure that these limits will not be transgressed. Perhaps that is so. But this is a static view of what may be required to maintain security and stability and also of the threats that violations of agreed arms limitations may pose. Neither will, in fact, be unchanging. Those who take the minimizing approach, to be sure, make their estimates conservatively and assume sizeable margins of error. Nevertheless, the calculations take into account only those assumptions as to the possibilities of violation and the needs of security and stability which can be made at the moment the calculations are made. Obviously this is an unavoidable hazard of all projections of future needs. But the possibility that the assumptions will be proved inadequate may suggest that systems should have greater rather than lesser capacities. Of course, changing assumptions may reduce rather than increase the demands made on inspection systems. But it will always be easier to discard or decide not to employ capabilities that exist than to agree on installation of new ones not previously accepted. A more elaborate inspection system seems, on the whole, more likely to respond to unanticipated requirements than one that is tailored to minimal standards at the outset.

Thirdly, criteria ignored by the minimizing approach may in fact be important both to the creation and the successful operation of arms control systems. Although arms control has many important technical components, the fact that arms control will finally be a political process should never be lost sight of. The minimalist approach may be correct in

assuming that governments will find it politically feasible to agree to arms limitations providing for inspection that promises no more than that national security and stable deterrence will not be undermined.

There is little to support this assumption, however, in the recent history of United States Congressional concern with the inspection arrangements for the nuclear test ban. The evidence, in the United States at least, is that for arms agreements to be politically acceptable, they may have to provide high assurance that cheating is not possible. The argument that "this much is enough" may be a very difficult one to sell to a public accustomed over the years to believe "there can't be enough." Given the climate of suspicion as to Soviet motives and the widespread belief that the USSR will try to cheat—and whether that belief is correct or not does not, for this purpose, matter—the condition for United States acceptance of an arms control agreement may well be the government's ability to assure the people that only very slight opportunities for evasion will exist.

Moreover, if control systems are to work well and serve as platforms from which to launch more advanced disarmament ventures, they will have to satisfy the governments and peoples concerned that national interests are being served by the systems' continuing performance. Inspection itself will be a source of friction and discontent and that argues for keeping inspection to an essential minimum. However, the process of mutual reassurance is more likely to benefit from a level of inspection that provides guarantees that the system is working as it is supposed to than from a level of inspection designed to provide evidence only that security is not threatened. The formula "the more information the better" may be an oversimplifying exaggeration. But, national sensitivities being what they are, reliable information is likely to be a useful solvent for suspicions and insecurities. Progress along the disarmament road will surely depend on a high degree of satisfaction with the early stages. And that, in turn, may well depend on the availability to nations of a considerable quantity of reliable and reassuring information.

The analysis has revealed another tension between, on the one hand, the apparent advantage of extensive interacting systems to inspect intensively a range of arms regulations and, on the other, the desirability of identifying individual measures on which agreement can soon be reached. Fortunately, these two desiderata are not mutually exclusive. If the time dimension is introduced, it becomes possible to view the selection of individual measures with which to begin the disarmament process as a prerequisite to the institution of the more elaborate systems.

A third tension has been revealed between the advantages offered in many circumstances by reciprocal inspection systems and the negotiating emphasis (unbreached except for the Antarctic Treaty and the recent developments with respect to the test ban) on impartial inspection systems. To insist that impartial systems are necessary in all cases implies that the satisfactory working of arms control systems and effective responses to violations depend on the crystallization of a broad international consensus, rather than on the view taken by the principal parties as to how their national interests may be served. This paper has suggested that the latter may be closer to reality than the former. Reciprocal systems deserve much more attention than has been given them.

No one who conscientiously essays to examine the tangled skein of differing, often contradictory, objectives, and technical and political considerations that are involved in the inspection problem can easily arrive at any one organizing or clarifying principle. The dilemma has surely afflicted the governments which have had to devise policies to serve national interests while taking account of the variety of factors at play. Is there any policy problem on which government policies have shifted more often than they have on arms control in the postwar years? These shifts may be due to the vagaries of policy-making, to the impact of changes in key personnel, and to the shifting political requirements of governments as the environment, both domestic and international, changes with time. But it is just as likely that the wavering has been nothing more than an accurate reflection

of the uncertainties inhering in the subject. There are few policy issues that invoke more complex interactions among goals, changing technical considerations, and the resulting strategies or policies.

Because the test ban has been a live issue for governments, the test ban negotiations have forced governments to confront the inspection issues as they have not had to do with respect to more remote proposed limitations. The test ban plans, for many reasons, directly confront the governments concerned with the real and very significant issue whether the way to begin the disarmament process is to identify measures on which, because they are limited, the governments may have enough common interest to make agreement possible. It challenges Soviet claims that the USSR will not accept inspection until there is disarmament and that only far-reaching inspected disarmament measures can be considered in the first instance.

These Soviet assertions are hard to take seriously because they imply willingness at the outset to accept all the burdens and disadvantages of full-scale inspection. It is also a measure of Western willingness to apply the underlying principle of their general disarmament proposals—that some risk may be acceptable provided the deterrent balance and the capacity for national defense cannot, as a result, be seriously affected.

Despite the arguments for the advantages of major interacting inspection facilities which have been sympathetically considered in previous passages of this paper, it is difficult to believe that nations unable to agree on restricted inspection systems will be able to agree on arrangements that may require rights of access for literally thousands of inspectors into the most closely held military and production secrets. Or that governments unable to accept the limited risks of such measures as the test ban will be able to agree on the much greater risks of more extensive arms limitations.

The test ban issue is significant because, despite the importance of the proposed limitation, it is a relatively low-risk measure. The test ban asks governments to forgo reciprocally

the advantages of further testing and to accept inspection arrangements which, however costly and technologically complex, involve relatively little penetration of sovereignty or of national fabrics, compared with the inspection measures, at once more extensive and more intensive, called for under any of the first-stage disarmament plans. Neither the risks nor the inspection should be unacceptable. This would be particularly true if, as is possible, the recent test series have approached exhausting the gains to be achieved by further immediate testing. If neither side can gain much more from tests, neither side risks a great deal in those limited opportunities the other side may have for evading the proscriptions. Over the longer term, the risks might be somewhat greater, but even these will remain limited if, as seems to be agreed, the only real opportunity for evasion will lie in small, costly, underground tests.

No doubt the negotiations have been complicated by the reluctance of the United States to agree to a system which, by instituting less than the best conceivable inspection arrangements, seems to set a bad precedent for future agreements in other spheres. The nuclear test ban is a pilot agreement and should, therefore, establish a model for future emulation. However, to state the problem this way does not solve the question of what principles determine whether a model is a good one.

One possibility is the minimalist answer, or some variant of it, emphasizing the necessity for an inspection capability which, given the environment of strategic and other relationships, provides assurance merely that national security and strategic stability will not be jeopardized. That standard might be met by a test ban inspection system that did not ensure against small underground tests. Or, it might be determined that the only good model would be a system that promised, through high-reliance inspection arrangements, to ensure that obligations were being fulfilled, and thereby reduced to a minimum opportunities for fearful uncertainty and friction. That decision might, incidentally, lead to the conclusion that no test ban system is acceptable because none

that has been considered promises to detect all possible violations. In any event, the system clearly does not have to be impartial to be a good model for the future. A model should be asked to meet only functional standards. A reciprocal system, if it met the needs of the test ban, would hardly be a poor precedent for later systems that might or might not call for impartial arrangements.

It is not necessarily true that if the great powers cannot agree on this proposed limitation, there is no hope for other measures to regulate arms. But the hopes for further progress will surely recede if agreement on the test ban is not forthcoming soon. There can be no doubt that the test ban issue is a significant measure of the governments' willingness and ability to achieve the kinds of compromises, assuring that the irreducible interests of all are protected, which will confront them at every stage of the disarmament process. Failure of the test ban negotiations would properly result in deep gloom as to future prospects.

There is one hopeful lesson to be derived from the test ban negotiations under the auspices of the Eighteen-Nation Conference: the opportunity to expose powers not directly concerned in the test ban negotiations[84] to the inspection issues has led to a considerable development of their awareness of what is at stake. A key to progress in arms negotiations may well be the broad realization that slogans do not solve disarmament problems. This might foreclose propaganda gains to the USSR and open the path to serious negotiations on the tough inspection issues among the parties principally concerned. The Eighteen-Nation Conference has also revealed that the lesser powers are well aware that the main issues are those that directly concern the great powers. The non-aligned participants have demonstrated that they wish to help the great powers to reach their own resolutions of the issues between them, and also that such resolutions, if they can be reached, will be satisfactory to them.

[84] These take place in a subcommittee comprising the United Kingdom, the USSR, and the United States.

To sum up the weight of the preceding analysis and to reach simple conclusions is not easy. However, the conclusion seems warranted that small steps must be taken before larger ones. Whatever the Soviet Union may say about having greater first-stage ambitions, it is hard to credit it with serious intent unless less demanding first-stage measures involving more limited inspection burdens prove acceptable to it. The USSR has every reason to know that the world is not ready for the near foolproof inspection its first-stage proposals would require.

It may be a hopeful omen that, during the 1962 General Assembly, the USSR indicated it might depart from its previous position. The suggestion that it would agree to retention of a "strictly limited and agreed number"[85] of missiles is encouraging and certainly deserves serious exploration. But this is a very limited concession to the principle of stabilized deterrence, particularly since there is no evidence of a Soviet shift with respect to aircraft on which deterrence still largely depends. Moreover, if the "strictly limited" number is very small, the problems of inspection may be as great as those of inspecting a complete prohibition, perhaps even greater.

One of the important tasks confronting the West is to convince the world that partial measures are an essential beginning toward general and complete disarmament. Perhaps when the Soviet Union ceases to gain propaganda advantages from the promulgation of slogans, it will find that its interests call for serious negotiation on limited measures.

What of the tension between minimal and more extensive inspection requirements? From what has preceded it is clear that inspection to confirm performance of obligations and to provide the greatest possible assurance that all violations will be detected is very desirable. On the other hand, secu-

[85] See note 31.

rity considerations are central, and inspection arrangements may be acceptable if they sacrifice some of the reassurance features so long as they meet the minimal standard of providing high assurance against violations that would jeopardize the security of the participants or threaten the balance of deterrent power. While more inspection is desirable, at least this much is essential. If it is not only desirable but essential to be sure that *no* nuclear materials, or chemical or bacteriological supplies capable of being used for weapons, for example, can escape detection, the possibilities of agreement will be very slight. Only if some evasion of such obligations, which will at best be very difficult to inspect, is tolerable, can they be subjects of agreement.

If the range of inspection requirements is visualized as running from "essential" or "acceptable" to "desirable," every effort should be made to negotiate agreements toward the upper end of the scale, but the longer the scale the more possible it is to have agreements that fall short of the upper levels. The key to successful negotiations may be to identify arms limitations that either pose no great difficulties to inspection at the "desirable" end of the scale (and such measures will be few in number and hard to discover), or involve a considerable range between what is essential and what is desirable. Unless such a range exists, if what is essential and what is desirable are the same, or nearly the same, there will be little margin for error and a very narrow possibility of negotiated agreement.

Clearly, agreements that guarantee a continuing flow of reliable information about all aspects of performance under the agreed obligations will help to reduce the opportunities for subsequent breakdown of the systems. To accept less is undoubtedly to give up something important.

Governments confronting these choices will have to balance the risks and costs of the compromises they are asked to make against the risks and costs of maintaining the armaments burdens with which we have become familiar and which we anticipate for the future. There can be little doubt that the world would be a better place if the heavily armed

powers could successfully negotiate the first steps on the long path of arms reduction.

In taking first steps, as in all later stages in the progression, compromises will be necessary. In the early stages, the risks minimal agreements pose to security and stability will be tolerable if the measures that are negotiated take adequate account of the considerations sketched in preceding chapters of this paper. Sacrificing desirable measures of inspection, however, will inevitably pose other, very serious, risks, since minimal agreements will leave great openings for misunderstandings, friction, public fears and alarms, and deterioration of international relationships. If minimal systems are to work, governments will have to accept heavy responsibilities to make them work, and in some respects those responsibilities will approximate the conditions they would be asked to meet under arrangements providing for the more desirable kinds of inspection. If the breakthrough represented by first-stage agreements is to be consolidated and built upon, governments will have to behave in ways which will reassure other governments that the agreements are continuing to serve national interests.

Major disarmament will become possible only when the lesson has been learned that governments which wish to disarm have an interest in the greatest possible flow of information about the disarmament process. Basically, Secretary Rusk was right when he said that "secrecy and disarmament are fundamentally incompatible." If this principle cannot be articulated in first-stage agreements on arms regulations, it nevertheless will be unavoidable in the implementation of those agreements. In the end, it will have to be faced by governments as they contemplate more far-reaching measures.

FUTURE ISSUES OF INTERNATIONAL CONCILIATION

- **THE SAHARA – BRIDGE OR BARRIER?**
  by I. William Zartman — No. 541 — January 1963

- **THE EAST AFRICAN FEDERATION**
  by Carl G. Rosberg — No. 542 — March 1963

- **INTERNATIONAL LAW IN A DIVIDED WORLD**
  by Oliver J. Lissitzyn — No. 543 — May 1963

ISSUES BEFORE THE 17th GENERAL ASSEMBLY

will be published in French on December 1, 1962.

United Nations Study No. 11

The Secretariat of the United Nations

by Sydney D. Bailey

Former Director of the Quaker United Nations Program and author of *The General Assembly: A Study of Procedure and Practice*

The conflict between the idea of an independent civil service for the United Nations and recurrent demands for political representation in the Secretariat is the focus of *The Secretariat of the United Nations.*

Analyzing this clash of concepts, Mr. Bailey traces from its beginnings the idea of an impartial international civil service, and reviews its development in the League of Nations and the United Nations. He considers the meaning of Soviet opposition to such a concept and examines Nikita Khrushchev's motives in denouncing Dag Hammarskjold's administration of the Secretariat.

He treats in detail Hammarskjold's conception of what the role of the Secretary-General should be. He describes some of the problems facing the UN Organization and appraises the present pressure to hire UN staff on a geographical basis. He analyzes the effects which adoption of the Soviet *troika* proposals would have on the organization.

120 pp. $3.50

Published by Carnegie Endowment for International Peace, New York and Stevens & Sons, London

NEW CARNEGIE ENDOWMENT PAPERBACK

THE UN IN THE CONGO

A Quest for Peace

by King Gordon

A preliminary examination of the role of the UN in the Congo, taking into account the issues before the Security Council and General Assembly, political developments in the Congo, and the UN operation in the field. The study also examines the role of the Secretary-General during the crisis.

KING GORDON served for twelve years as Senior Officer in the UN until his retirement last year. He served at Headquarters and in the field in the Division of Human Rights and as Chief Information Officer for the UN Korean Reconstruction Agency, Director of Information, Information Center for the Middle East at Cairo, Chief Information Officer for the United Nations Emergency Force, and Chief Information Officer for the UN Organization in the Congo.

Paperback 176 pp. $1.95
Publication Date December 1962

NEW CARNEGIE ENDOWMENT PAPERBACK

THE UN IN THE CONGO

A Quest for Peace

by King Gordon

A preliminary examination of the role of the UN in the Congo, taking into account the issues before the Security Council and General Assembly, political developments in the Congo, and the UN operation in the field. The study also examines the role of the Secretary-General during the crisis.

KING GORDON served for twelve years as Senior Officer in the UN until his retirement last year. He served at Headquarters and in the field in the Division of Human Rights and as Chief Information Officer for the UN Korean Reconstruction Agency, Director of Information, Information Center for the Middle East at Cairo, Chief Information Officer for the United Nations Emergency Force, and Chief Information Officer for the UN Organization in the Congo.

Paperback 176 pp. $1.95

Publication Date December 1963

CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE

CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE
United Nations Plaza at 46th Street, New York 17, N. Y.

EUROPEAN CENTRE
172, route de Ferney, Grand-Saconnex
Geneva, Switzerland

United Nations Plaza at 46th St., New York 17, N. Y.