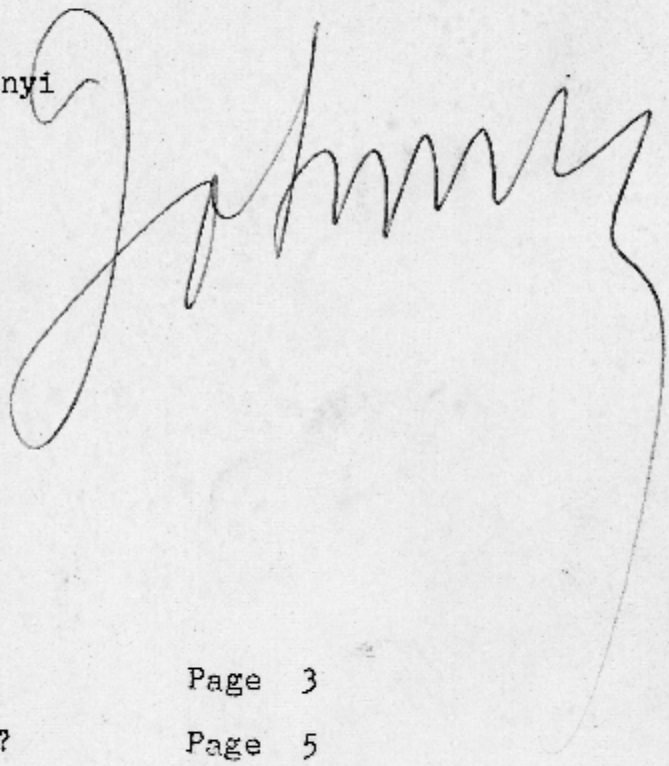
THREE ARMAMENTS POLICIES FOR THE 1960's

by

J.C. Polanyi



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An apologist for arms control or disarmament is well advised to preface anything he has to say, with the admission that arms races in the past have not always lead to war nor have wars invariably been caused by arms races. By this admission he establishes himself as a sound thinker, without in the least compromising his basic belief, which is simply that the present arms race is proceeding at such an extremely rapid pace (largely because of the rapid rate of obsolescence in weaponry) and involves weapons of such fearful destructive power that, by contributing to international fear and tension, it might easily be the cause of the next war - the most horrible in history.

This was forcibly brought home to me when I attended a discussion on arms control and disarmament with Soviet scientists, strategists, and others, in Moscow. Perhaps the most striking impression that remained after 10 days was that of the symmetry of fears on either side. Not infrequently one had the feeling that one was arguing with one's reflection in a mirror. It was as plausible that the Western powers might launch a surprise attack on the Soviet

Union, to forestall a surprise attack that they feared the Soviet Union was on the point of unleashing against them, as was the reverse occurrence with the Soviet Union as agressor.

The surprising thing, of course, is not that this symmetry of fear existed, but that its existence was freely acknowledged. The mutual fear could be acknowledged because it was so evidently a consequence, not of our common criminality, but of our common predicament; namely involvement in a provocative and ever-accelerating arms race.

As Lord Grey of Fallodon remarked in more leisurely times,

> ".. each government feels it would be criminal and a betrayal of its own country not to take every precaution, while every government regards every precaution of every other government as evidence of hostile intent."

Today the mounting spiral of precaution - fear - increased precaution - increasing fear ... gains momentum from the unparalleled scale of the 'precautions' and of the consequent fears. The Russians are at work on a thermonuclear weapon with the equivalent power of 100 million tons of TNT. The appearance of a single bomber armed with such a weapon over a city would represent a threat equivalent to a ten-million-bomber raid in the last

war, if one can conceive of such a thing.

The Rand Corporation has estimated that a major nuclear war in the next few years would be likely to result, in the United States in the destruction of the 50 major ~~XXXX~~ cities and in the death of around 90 million people.

* *

A 'Credible' Threat.

Strategic thinking (as it is called) on this problem appears to be taking three distinct directions. The first proposal would involve an attempt to blunt the blow from an all-out thermonuclear war by means of civil defense. The objective would be to reduce the anticipated casualties to a sufficiently low level that the threat of thermonuclear war could be credibly used in order to deter the Soviet Union from undertaking any 'extremely provocative acts (acts which threaten ~~our~~ Western vital interests). This view is set out at length in an important study by Herman Kahn of RAND; On Thermonuclear War[1].

He argues that the consequences of nuclear war without civil defense are so ghastly that the United States can credibly threaten such war only if its homeland is threatened. (Threats used in order to deter an enemy from

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[1] On Thermonuclear War By Herman Kahn.
Princeton University Press.

attacking the homeland, he refers to as 'Type I deterrence'). The United States is therefore without an effective deterrent against highly provocative acts short of a threat to the homeland. (Attempts to deter highly provocative acts, short of a threat to the homeland, he classes as 'Type II deterrence').

Kahn and his colleagues have calculated that a 'minimum' civil defense program, costing about $500 million, would reduce casualties from the figure of 90 million quoted above, to around 50 million. The corresponding times for economic recovery are 60 years as against 15 years. This minimum civil defense is largely a matter of fall-out protection. In addition Kahn's proposal includes a program for 70% evacuation of all major cities in moments of crisis. With this major evacuation the casualty figure should drop to around 15 million (time for economic recovery 7 years), he calculates. The Soviet Union suffered 20 million casualties in the course of the last war, so a threat on the part of the U.S.A. to risk 15 million casualties should, he suggests, strike them as a credible threat. (To which the sceptic may reply that they did not suffer these casualties on one day, nor risk them on one throw of the dice.)

The evacuation of cities occupies a special role in his proposal. He considers it necessary that we have some way of indicating to our opponent the genuiness of our

resolve. The evacuation of cities would provide us with this, since it would constitute what he ponderously describes as a 'pre-attack mobilisation base' - a position of evident battle readiness.

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A Credible Calculation?

Mr. Kahn is to be commended for having the courage to take a hard and objective look at the world as it would be after a nuclear war. Not only is the calculation enormously difficult, but it is enormously distasteful. Moreover, anyone who dares to point out that 50 million dead are better than 90 million, and 15 million better than 50 million, must expect to be accused of being an unfeeling and inhuman monster. Mr. Kahn expected to be so accused, and he has not been disappointed.

Kahn is not inhuman, as his critics suggest. But neither is he superhuman, as his disciples unconsciously imply. Because he has had scientific training and has attempted to substantiate his arguments by numerical calculation, his conclusions have been hailed, with varying degrees of naivetee, as constituting 'scientific proof'; if not of his thesis at any rate of his figures. It seems to be necessary to point out that when one says that Mr. Kahn has been 'scientific', 'objective', and so forth, one is merely saying that one believes his conclusions to follow from his premises.

However, his premises consist of a simple 'model' of reality, a model with sufficiently few elements so as to render it susceptible to calculation. The problem in reality is one of staggering complexity. Nuclear weapons of the size and type, let alone the number, he is postulating, have never been employed against any city. The effects of fall-out, of blast and of fire are problematical in the extreme. Indeed they must vary from city to city and from one day to the next. The effect on the national economy of the sudden removal of these cities from the map is, strictly speaking, quite incalculable. A city is a socio-economic unit, a nerve centre in the body of the nation. What is the effect of removing the 50 major ganglia? And beside the social and economic effect, what of the psychological effect?

Kahn and his colleagues at the Rand Corporation were forced to reduce this complex reality to a simple 'model'. Their conclusions derive from this simple model. The only test we have of the validity of their model is the plausibility of their conclusions. It may be asked what is the value of their elaborate and painstaking calculation if we are forced, ultimately, to rely on an intuitive assessment of the 'reasonableness' of their conclusions. This question has many answers at various levels of profundity - most of them far beyond my reach. It will be enough to note that the 'intuitive assessment' referred

to above is not made in vacuo but will undoubtedly be influenced by the calculation it is meant to assess. Secondly it is valuable to have a body of self-consistent data, even though it all stems from a shaky premise, that is to say from a greatly over-simplified model. Even though the absolute results (90 million U.S. casualties from an attack in the next few years) of the calculation are subject to very considerable error, relative figures (about one half saved by 'minimum' civil defense) could be sufficiently reliable to act as a guide in our thinking.

Even this, of course, is far from certain since important new assumptions are involved in a calculation 'with civil defense' that were not part of the calculation without civil defense. Moreover, ultimately our thinking will be based on absolute figures, not relative ones, since it is the absolute number of casualties that determines the suffering of a nation, and hence determines the credibility of any threats the nation makes which imply willingness to tolerate such suffering.

So much depends on the reliability that we place on calculations of this type, and the reliability that we may reasonably suppose our opponents will place on similar calculations, that it is worth giving a couple of illustrations of the degree of unreliability to which they are subject.

In 1942 a committee of distinguished scientists, experienced in strategic calculations, attempted to calculate for the British Government the damage that would be caused by mass bombing of Germany. The results of their calculations showed a spread equal to about 5 times the lowest estimate.

The problem, of course, was far easier than the one Kahn has tackled. The British scientists were speculating about conventional explosives which had been used again and again under wartime conditions. Moreover, they had control over the amount of explosives to be used, and the targets on which it would be dropped. (It has been alleged that the member of the committee who arrived at the high estimate, Lindemann, later Lord Cherwell, was biased. If this is indeed the effect that prejudice can have on the calculations of an eminent scientist, then we should take careful note of the fact. Since we have no guarantee that the Russians will share our prejudices, it would appear that we have no guarantee that they will share our conclusions as to risk, credibility, and so forth).

Estimates of the time, or 'cost', of recovery, which figure largely in Kahn's argument, must be subject to additional uncertainties. It is hard to find a precise analogy, but the example quoted (in another context)

by Albert Wohlstetter of the Rand Corporation suggests the sort of spread that cost estimates can have, when there is uncertainty as to the number, nature and cost of the items that contribute to a complex whole. The estimated cost of a missile when calculated in 1949 came to $35,000 per missile. When re-calculated in 1957 the figure came to $2,000,000. "The less we knew," Wohlstetter remarks, "the more hopeful we were."

Kahn and his colleague's have attempted to hedge against this danger by making the more pessimistic assumption wherever there was an evident choice. Consciously or unconsciously they would, of course, have to set a strict limit to their pessimism. Otherwise the uncertainties in their calculations (as indicated by the much simpler calculations referred to above) would surely have led them to conclude, pessimistically, that major nuclear war, with or without civil defense, would involve losses of such a magnitude as could only credibly be risked in defense of the homeland (Type I deterrence).

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Credible to Whom?

I have been at pains to underline the uncertainty in Kahn's calculation not because I would think it proper to reject it out of hand, but because I fear that the non-scientific reader may feel that he is under some compulsion

to swallow it wholesale.

A rather extreme example of what I have in mind is evident in the reaction of an experienced military commentator who reported that as a result of a "thorough scientific enquiry conducted by the U.S. RAND Corporation" it had been established that, provided certain basic preparations are made, economic recovery would be 60 per cent complete within one year of a nuclear war in which the U.S. lost its 50 largest cities.

If science claims to have proved this, science is an ass. Kahn is not; for he says (on p.629), "we concede that the uncertainties are large enough to raise the question of sheer survival, and the problem gets more severe in later time periods."

I have already suggested, parenthetically, a further important reason for taking note of the uncertainties in this type of calculation; a great deal depends on the degree of assurance that we can have that our opponents will believe our calculation, or even will believe that we believe it.

This point merits closer examination.

The main burden of Kahn's argument, it will be recalled, is that by evacuating all our major cities at moments of international crisis we can simultaneously (a) demonstrate our intention to fight an all-out nuclear war if need be and (b) protect our population to such a degree that the threat appears credible.

The difficulty with this policy is that it forces us to walk on a tight-rope: our pre-attack mobilisation must be credible enough that our opponent decides to cease his provocative behaviour, but not so credible that he panics, believing that his security will shortly be threatened, and attacks us while we are still vulnerable, that is to say while evacuation of our cities is in progress. The precise location of this tight-rope is dependent on the results of a Kahn-type calculation, not necessarily made by Kahn. For it is not enough that we convince ourselves that we are standing on the tight-rope; we must convince our opponents.

A number of factors over which we have no control could make the opponent prefer to attack rather than back down: internal politics, a belief that vital interests are at stake, national pride, the feeling that once he submits to 'nuclear blackmail' (in our own phrase) he is lost, an exaggerated idea of the efficiency of our civil defense (that is to say, an exaggerated idea of the shift in balance of power that will result from our evacuation; this is where the uncertainty of the Kahn-type calculation is so important), and the fear that we may have developed an anti-missile device with which to supplement our civil defense.

Alternatively he may evacuate all his major cities and provoke in us the response to which I have just

alluded (a desire to pre-empt) for the reasons I have just outlined. One thing is sure: if we permit the Soviets to evacuate their cities then Type I deterrence will, by our own calculations, be at an end. They can now attack our homeland without suffering an unacceptable retaliation.

What are the chances of extricating ourselves from this tangle without being driven by pride or fear over the brink into war? What are the chances of extricating ourselves once? Twice? An indefinite number of times? (Kahn envisages an evacuation every few years).

It is essential to bear in mind that these excercises in brinkmanship will occur in a world where constant efforts must be made to keep the path over the brink smooth and slippery. Otherwise, our opponent will surely be tempted to call what he believes to be our bluff - with disasterous consequences.

An important factor contributing to international tension under these circumstances will be the emergence of a new type of 'arms race'; that is, a competition in civil defense. This will be far more conspicuous and therefore more dangerous than the present arms race. It is impossible to have effective civil defense - including provision for speedy evacuation of all major cities - without the full cooperation of the civilian population. This cooperation can be obtained partly by coercion. Largely,

however, it must be obtained by convincing the population of the reality and the imminence (for where horror is concerned only the imminent seems real) of the danger. International tension is seen to be not simply a concommitant of effective civil defense, but a prerequisite.

We come back to the same question that I posed earlier; how long could we hope to continue making use of such threats, in a world far more tense than that of today, without finding ourselves either having to concede that the threats are empty (failure of Type II deterrence) or having to implement them and accept the consequences (failure of Type I deterrence)?

If the answer is, as I think it must be, "a few years", then we must ask ourselves whether we are willing to sacrifice in the region of 15 million people every few years in order to ensure the integrity of the 'free world'?

If there are people who can take such a question seriously, then the process of "moral deturpation" that Wayland Young has described, is moving apace.

I cannot leave Mr. Kahn's proposal - which one might characterise as 'the strategic use of civil defense' - without commenting on the likely future of civil defense. As the '60's proceed civil defense requirements will become more stringent in proportion as the nuclear threat becomes

more massive. Kahn himself discusses this*, and concludes that the policy he outlines is feasible for the next few years only.

It may be asked why one should trouble to refute his argument if it will, before long, die a natural death. The answer is that policies suggested for the next few years are still being suggested for 'the next few years', more than a few years later. The strategist, having submitted himself to the lengthy and painful process of indoctrination ('On Thermonuclear War' has 651 somewhat dishevelled pages) is in no mood to let his mind be changed in a hurry.

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Complete Disarmament.

In opening these remarks I observed that strategic thinking today appears to be taking three distinct directions. I have mentioned only one of these directions. It is actually a retrogressive policy, since it seeks to tame all-out nuclear war in order to make it serve, as has warfare in the past, as an instrument of diplomacy. This

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* However, he fails to give proper weight to the fact that once civil defense becomes a really significant factor in the balance-of-power calculation, modifications are likely to be made in the arsenals of both sides to render civil defense more difficult. Chemical and biological weapons, for example, would be expected to have an enhanced efficiency against a population which has sunk itself below ground level.

appears in the short view to be highly dangerous, and in the long view completely irresponsible.

What remains?

The two remaining paths, 'limited arms control', and 'complete disarmament', both involve agreement between potential opponents that they will limit the permitted range of military competition.

These too are in the military sense 'retrogressive' policies since they attempt to stop the armaments clock, or turn it backwards. The objective in this case, however, is not to restore all-out war to its classic role as an instrument of diplomacy, but simply to make it less likely to occur, or, ideally, to make it impossible.

I shall use the term 'limited arms control', or simply 'arms control', to describe any measures that may tend to stabilize the 'balance of power', excluding complete disarmament. 'Complete disarmament' is the particular measure of arms control that seeks to stabilize the balance of power at a very low level indeed, namely the level of forces required by each nation for internal security.

Until quite recently such proposals, which in effect require that parties to a disagreement agree as to the fashion in which they may disagree, have been regarded by all but professional dreamers, as being utopian. Today

this is changing. Agreement on limited measures of arms control is regarded as a definite possibility. However, complete disarmament is still regarded by the majority of professional and quasi-professional Western strategists, as a chimera.

The extent to which limited arms control has achieved respectability is illustrated by the following quotation from an article by George A. Kelly in the Military Review of January 1961 (as reprinted in 'Survival', May-June 1961).

> ".. it now appears that an unlimited arms race must, sooner or later, produce either technological breakthrough, favouring the potential attacker out of all due proportion, or else lead to such conditions of hostile suspicion and political disequilibrium that a total war would become inevitable. The alternative to this mounting spiral of menace would seem to be some kind of limitation or 'freeze' on the essential strategic weaponry of the antagonists."

The burgeoning of interest in limited arms control has not, however, been accompanied by any appreciable softening in the attitude of disdain for the 'disarmament expert', who is described by the same writer as "apt to be a bit of an idealist or a pacifist, in few cases.. with a grasp of

the bewildering complexities of technological war."

It is encouraging thing to read a statement like this one on arms control in a military magazine, and to feel the educational process at work: even if one believes, as I do, that education will have to be followed by re-education. For, as I shall try to show, though the notion of complete disarmament today is utopian, the policy of limited arms control, regarded as anything but a very short-term palliative, may be even more utopian. Complete disarmament would require an act of will. An act of will so improbable that we might characterize it as a miracle. Effective and enduring arms control, on the other hand, would appear to require a sustained display of diplomatic skill and mutual understanding between fully armed opponents, that would be tantamount to an unending sequence ~~in~~ of miracles.

The difficulty with complete disarmament is that nobody wants it. Not East or West, and still less the other compass bearings. For the political price of complete disarmament is high.

A disarmed world, it has been formally agreed by the Soviet Union and the U.S.A., would not long be a world at peace, without an effective international police force. Such a police force could not be effective unless there were a supra-national

organization[2] to control it according to an agreed code of behaviour. This is the political price; the surrender of a substantial amount of national sovereignty to an international agency. And this no nation has yet shown willingness to do, since all are convinced that survival can be assured at some cheaper price.

At present, the prevailing view is that limited measures of arms control represent the greatest hope for survival at a political price which is not exorbitant.

The 'political price', in this case, can be measured in terms of the amount of veto-free inspection, or other infringements of sovereignty, that the measure entails.

Whether or not the price does turn out to be exorbitant will clearly depend not only on the price itself but also on the likely gain in security from the measure under consideration. There is, I fear, reason to doubt whether this gain will appear great enough to justify the payment of any but a very small price. If this is correct it will make it extremely difficult to reach agreement. I shall attempt to give substance to these fears in what

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2 The most detailed attempt to describe such an organization is to be found in 'World Peace Through World Law' by Grenville Clark and Louis B. Sohn. Harvard University Press.

follows.

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Limited Arms Control

The philosophy of limited arms control can best be illustrated by reference to the large and growing body of literature on the subject. An excellent general introduction is to be found in a volume of essays entitled Arms Control: Issues for the Public[3]. The point of view of the book is summarised by Robert R. Bowie (assistant secretary of state until 1957, now director of the Center for International Affairs at Harvard University) at the close of his contribution. He says,

> "This article has explored the relation between political tension and hostility, and cooperation for arms control under current conditions. Its conclusion is that the underlying hostility does not exclude measures for arms control which would reflect existing mutual interests in avoiding unintended war or futile arms burdens or dangerous arms competition. Yet any such measures will have to be designed for adoption and operation within a framework of intensive struggle and conflict among the participants."

Arms Control: Issues for the Public. Edited by Louis Henkin Prentice-Hall.

Here is the crux of the matter. Can we really hope to reach and maintain agreements which have sufficient substance that they significantly diminish the "dangerous arms competition", and yet are so neutral in their effects, and remain so neutral, that they do not run afoul of the "intensive struggle and conflict among the participants"? I fear that we shall encounter great difficulty in doing so. I propose to elaborate on these difficulties; not because I wish to argue that it is pointless to seek agreement on limited measures of arms control, but because I believe that these considerations have a relevance to our search for such agreements. They may determine whether we seek limited agreement while paying lip service to the idea that further steps (political and military) are essential, or whether we really believe this to be the case.

Limited measures of arms control will, I believe, be hard to obtain and hard to maintain in force, for two reasons. The first is that mutual reassurance against the dangers of cheating will be extraordinarily hard to achieve in a world of intensive struggle and (military) conflict. The second reason has to do with the changing military requirements in a fully armed world: a world in which technological revolutions follow one another with unprecedented rapidity. These military requirements are of two kinds: requirements for the maintenance of effective tactical forces

(limited-war forces) and requirements for the maintenance of invulnerable strategic forces. The latter constitute the essential element in 'stable deterrence'; a concept which lies at the heart of arms control.

I shall discuss in turn the problems of mutual reassurance against cheating, and the problems involved in reconciling changing military requirements, with arms control.

* *

Limited Inspection

"Mutual reassurance" will be based largely on mutual inspection. Unfortunately it is extremely hard to design an inspection system which provides a satisfactory assurance to side A that side B is not cheating, without at the same time presenting an unacceptable risk to side B that side A is spying.

'Spying' of course means the gathering of information about military matters that are not subject to the arms control agreement. The substitution of random sampling for systematic searching, in an attempt to deter violation rather than detect it, may go some way toward meeting this difficulty; however, the difficulty will remain. Jerome Wiesner (Science Adviser to President Kennedy) gives an example of a random sampling program, in 'Arms Control: Issues for the Public';

> "A reasonable inspection procedure would be to examine 5 to 10 per cent of (each nation's) total area at any one time, and to have several cycles of inspection per year so that 30 to 50 per cent of a country would be covered in that period."

If, as in this example almost half the area of a country is inspected each year, the opportunity for 'spying' will be considerable.

Supposing that the arms control measure is a militarily significant one (and only such a measure has any real value) then there will at the same time be a very strong incentive for 'spying' - that is to say for extending the range of objects being inspected beyond those specifically sanctioned by the treaty. It is not enough, after all, for a nation to formulate suspicions of cheating; before it dare abrogate the treaty it will have to find evidence of cheating that can hope to stand up in the court of world opinion. As every court lawyer will attest, a case is not proven by a simple invocation of 'facts', but by the weight of evidence.

This is only one of the reasons for seeking to widen the scope of inspection. Another is that "inspection and surveillance must serve to keep each side informed of significant military developments that may require modifi-

cations in the agreement, or supplementary understandings"[4]. An arms control agreement may be acceptable to both sides in the context of one military picture and yet may favour one side if the other makes adjustments in its forces. Naturally the other will seek to make precisely those adjustments.

Finally we must take note of the important fact that (quoting Wiesner again), "interaction of the various inspection systems [in an agreement which restricted all types of weapons] would make up for the uncertainty permitted by any one." John Phelps, a physicist who has been devoting himself full-time to the study of arms control, makes the point more directly in his contribution to another recent volume, 'Arms Reduction: Program and Issues'[5];

> "It is a general principle of the design of most inspection systems that the more particularized the aims or the objects of inspection, e.g. controls on the production of long-range missiles without concern for other kinds of armament, the more inefficient the inspection is."

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4 Strategy and Arms Control, by Thomas C. Schelling and Morton H. Halperin. The Twentieth Century Fund Inc.

5 Arms Reduction: Program and Issues. Edited by David H.Frisch. Twentieth Century Fund Inc.

These three considerations all argue for a flexible and wide-ranging inspection system. However, this will surely be unacceptable except in the context of a wide agreement.

This suggests the possibility that the 'wide agreement' might take the form of a package of limited measures. However, there appears to be a grave difficulty with this approach. If as a result of changing tactics or technology a signatory to the agreement feels compelled to release himself from one of the controls comprised in the package (I shall suggest below that this is a [redacted] likely contingency), this would necessitate a complete re-assessment of the interlocking inspection system. The entire treaty would be thrown in jeopardy. If it survived it would be at the expense of heightened suspicion. If it failed to survive, it would be a major failure which could have serious consequences.

In essence the problem of inspecting limited arms control agreements will be to satisfy a legitimate demand for broad and flexible inspection, without at the same time doing violence to the equally-legitimate requirement for military secrecy. The middle ground between these two requirements may be narrow and shifting; if this is the case there is a real danger that over a period of time arms control will aggravate international tension. If, then,

arms control agreements break down (and even if they do not) we must expect an acceleration of the "dangerous competition" and an aggravation of the other dangers we have been seeking to combat.

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Tactical-Arms Race

The problem of inspection has been discussed first simply because it is so conspicuous. It constituted the principle subject for debate in 3 years of negotiation over the test ban treaty. However, the problem posed by the conflicting demands of military requirements and arms control is more fundamental and consequently more serious.

I have indicated that a major military requirement is 'stable deterrence'. Stable deterrence enters into arms control in the following way. The condition of stable deterrence is one in which both sides are in possession of powerful and invulnerable forces. The term 'invulnerable' is meant to imply that the force is sufficiently protected that it could still be used with devastating effect following a surprise attack by the opponent. Any lesser force than this would be dangerously provocative, since in moments of international tension each side would be strongly tempted to make a pre-emptive first strike against the other; this being the only type of attack that offered hope of success. More armaments than the minimum required for invulnerable

deterrence are also to be regarded as dangerous, since they invite an indefinite continuation of the arms race. Somewhere in between lies a zone of stability ('stable deterrence') which we must seek first to achieve and then to maintain. It is the role of arms control to assist in this, by regulating the development, production or use of strategic nuclear weapons.

The second military requirement is for a tactical force. In the world of 'stable deterrence' major international disputes which could not be settled by other means would, it is reasonable to suppose, be settled by a limited exercise of force. That is to say they could be settled by what, it is hoped would be limited wars, fought by armies against armies, with the aid of 'tactical' weapons.

There is no reason to look for an abatement, under stable deterrence, of the armaments race involving tactical arms. If this armaments race runs afoul of controls designed to moderate the pace of the other armaments race, that in strategic weaponry, then a serious strain will be placed on the controls. Since tactical armaments differ in degree and not in kind from strategic armaments, it is, in fact, very probable that controls designed to interfere with one type of armament will interfere with the other.

The test ban negotiations furnish an example. There is evidence that President Kennedy was under considerable

pressure to permit resumption of nuclear testing in order to facilitate the development of an anti-personnel nuclear weapon, the neutron bomb, which it is believed would be an important weapon in a limited war. This pressure from the Pentagon was not, though under slightly altered circumstances it might have been, responsible for the breakdown of the negotiations. However, it is altogether to be expected that a similar pressure exerted by the Russian generals on Mr. Khruschev (the Soviets having tested fewer tactical weapons are probably significantly weak in this department) contributed to their unwillingness and finally their refusal, to continue the negotiations.

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Strategic-Arms Race

The edifice of arms control is designed to rest on a foundation of stable deterrence. This foundation is both shaky and shifting. It is shaky for political reasons, shifting for technological ones.

The political limitation on deterrence is the following. The deterrent will only deter acts which are rationally conceived and rationally implemented. Regretably, rationality is not the distinguishing characteristic of political actions. Hedley Bull[6] makes this point in a passage

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6 The Control of the Arms Race by Hedley Bull. Weidenfeld and Nicolson.

which deserves to be quoted in extenso:

"In general there is no such thing as 'rational action'. The notion that there is a distinction between rational action and other kinds of action, or between reason and the passions, is indefensible in philosophy and psychology, but has somehow survived in political theory. The notion of 'rational action' is useful only when it is defined in a particular way, for the purposes of a particular body of theory. A great deal of economic theory proceeds upon some such notion of what is 'rational action' for 'economic man'. A great deal of argument about military strategy similarly postulates a 'rational action' of a kind of 'strategic man', a man who on further acquaintance reveals himself as a university professor of unusual intellectual subtlety. ... where 'rational action' is defined to exclude the deliberate choice of military catastrophe, this is not a notion in terms of which it is possible to account for any great part of the history of international politics, or to base any confident prediction about its future. The idea that war is a catastrophe which no government will choose to bring about has been a commonplace of writing about international relations since the

turn of the century. The decisions of governments on matters of peace and war, like those taken by the European powers in July and August 1914, do not always reflect a careful weighing of long-range considerations, or a mastery of the course of events: the questions which strike the historian of these decisions a generation afterwards as important appear crudely answered or, more often, not even asked: the governments appear to him to stumble about, groping and half blind, too pre-occupied with surviving from day to day even to percieve the direction in which they are heading, let alone steer away from it."

Some of these threats to the stability of 'stable deterrence' have been catalogued, in discussions of arms control, under the headings of 'the danger of accident', '.. of folly', '.. of unauthorized action', and so forth.

These dangers are easier to catalogue than to combat. The measures that have been suggested to deal with them appear depressingly feeble ("improved communications", an "international inspection team" that will go to the scene of unaccountable nuclear explosions...)

However, in my view, it is the technological threat to stable deterrence that will be decisive.

Let us suppose that agreement is being sought or has been reached on one or more limited measures: a test ban, demilitarization of outer space, a cut-off in the production of fissile material, a limit on stockpiles, controls on numbers of missiles, range of missiles and testing of missiles, renunciation of the first use of nuclear weapons ..[7].

The opposing sides can only be expected to tolerate restrictions on their freedom to develop strategic weapons, so long as there is in existence an unmistakable balance of strategic power; that is to say, so long as the condition of stable deterrence obtains.

Dalimil Kybal, a leading exponent of stable deterrence, analyses in 'Arms Reduction; Program and Issues'[5] the various types of technological breakthrough which could destabilize the strategic balance by rendering the deterrent (on one side or the other) vulnerable to a first strike. These include improved missile guidance accuracy, improved anti-submarine warning, and the development of anti-ICBM devices.

It should be noted that these innovations will not arise by chance. Even though both great powers may be fully committed to the stability of deterrence, neither can afford

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[7] These measures are discussed in moderate detail in The Nation's Safety and Arms Control by Arthur T.Hadley. (Viking Press), and in greater detail in Arms Reduction; Program and Issues[5] The latter is alone in discussing the measures in the context of a stage-by-stage program leading to virtually complete disarmament.

to take the chance that the opponent will be the first to make the destabilizing discovery; destabilizing in his (the opponents) favour. So both must give top priority to research which is designed to undermine the very agreement that both (if they are convinced of the value of arms control) are most anxious to see remain in force. If this competition is allowed to run its course, then the arms race is, in large measure, continuing. Kybal makes this clear when he concludes that,

> "arms control agreements ... should permit legal introduction of a new weapon system into the forces as soon as it is apparent that an enemy breakthrough has destabilized the existing force composition; this new weapon must be designed to counter the enemy breakthrough."

However, Kybal hopes that some partially-effective restraints can be applied to the arms-innovation race. It is, however, extremely hard to design such restraints. Unless we alter the nature of our society, developments in civil technology will continue to move very rapidly forward and are bound to affect the art of war.

The only hope of controlling military innovation - and it is a slim one - is at the testing, manufacturing and training stages. But is it really reasonable to suppose that, in a fully-armed world, our opponents will permit us to prowl around looking for evidence of testing, manufacturing

or training involving promising new types of weapons or anti-weapons? Surely this is tantamount to asking for an end to all military secrecy?

Of course, it may be argued that both sides, if they are basing their security on stable deterrence, should welcome the opportunity to give and to receive reassurance that the balance is not on the point of being upset. The difficulty with this argument is that, in so vital and yet so elusive a matter, as military innovation, the sort of reassurance that could be obtained from any inspection scheme (any that might be acceptable to two armed camps) would be utterly inadequate. The problem of inspection for hidden stocks in a disarmed world (alleged to be the stumbling block in all disarmament negotiations) looks quite tractable by comparison.

Faced with the near-impossibility of ending all military innovation some writers have suggested that we adopt a policy which is the complete opposite, namely that we seek to establish joint research and development establishments with the Russians. These joint research undertakings would have to be staffed with the ablest men on either side and be provided with every facility, so that they could outdistance any independent research that might be going on secretly in the participating countries. The joint research would be directed not only to developing new weapons but also to developing the means of implementing a ban on these new weapons, should any

country attempt to bring them through the testing, manufacturing and training stages.

This proposal seems quite fantastic. It is impossible to believe that two fully-armed antagonists could agree to undertake a vigorous program of joint military research. Indeed, they would be very rash to do so, in view of the large overlap between the technology of strategic weapons and the technology of tactical weapons. By cooperating in the development of strategic weapons and ancillary devices, they would also be assisting one another in the development of tactical weapons - the weapons that they would plan to use against one another in the event of a (limited) conflict.

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Stability versus Control

We can hope to place some barriers in the way of technological innovation at the testing stage, through the agency of such measures as the test ban and the demilitarization of outer space. However, we cannot hope to stem the strong tide of innovation by this means, only at best, to deflect it. To protect our deterrent force from the destabilizing effects of innovations we must be prepared to reorganize and re-equip as the art of war developes. This is, of course, precisely what the Great Powers have been doing over the past decade of unstable deterrence. It has

involved them in a continuous process of re-design and re-equipment. It is this process, coupled with the complementary activity of intensive military research, that has constituted the economic and psychological burden of the arms race.

How much different will the situation be in the next decade; even if we succeed in making it the decade of 'stable deterrence'?

The two related major features of the arms race, competitive military research and the need to re-fashion our weapons system, will still be operative. Can we hope to moderate the pace of the arms race significantly by building a structure of limited arms control on the basis of the stable deterrent? Only, it would appear, in the short run. In the long run the demands of stability, which take precedence over the need to control the arms race, will come into conflict with the provisions for arms control.

For example (the examples are hypothetical, and are offered simply by way of illustration) it may be considered necessary, in order to guarantee the invulnerability of the strategic deterrent, to place missiles beneath the polar ice cap. This could conflict with the only measure of arms control which has so far been achieved; the international agreement to demilitarize the Antarctic. Or (to give another example) it may be thought essential, in order to counter-act the destabilizing effect of antimissile devices, that we

increase the total number of missiles - contravening an agreement to limit this number. Or, to assure invulnerability to a first strike, it may be decided that we must disperse our deterrent force as widely as possible; this would suggest placing the weapons on satelites - contravening the demilitarization of outer space, at present the most hopeful area for arms control.

These considerations will be (and should be) in the minds of the delegates who sit down to negotiate agreements for limited measures of arms control. Realizing the limited utility and limited life-span of such agreements they will be loath to pay more than a minimal political price for them. Can we make the agreements saleable under these conditions? We must try. At the same time we should avoid placing too high hopes on success. Above all we must not conclude from failure that it is impossible to reach agreements on armaments. All that we may have proved is that you cannot reach agreements which are not worth reaching.

An agreement which would undoubtedly be worth reaching is one which represented a real step toward total disarmament, and which formed part of a program for total disarmament. But the ultimate political price, as I have remarked, is high. It would involve a renunciation by all parties not only of wars from which they have nothing to gain, but of all wars.

Have we an alternative?

The danger is that we may think we see one in Kahn's proposal; a last attempt to tame the nuclear monster - by civil defense - and to set the clock back to the time when major wars could be fought and won. There seems little doubt that this would result in wars being fought; but there is very serious doubt as to who or what would win.

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