

**Online Study Materials on
TECHNICAL, COLLECTIVE AND COMPREHENSIVE
APPROACH TO GLOBAL SECURITY**

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**Global Security: Concepts, Problems,
Threats and Prospects**

INTRODUCTION

By its resolution 38/188 H of 20 December 1983, the General Assembly requested the Secretary-General, with the assistance of qualified governmental experts, to carry out a comprehensive study of concepts of security. In the operative paragraphs of that resolution, the General Assembly:

"1. *Welcomes* the report of the Independent Commission on Disarmament and Security Issues as a timely and constructive contribution to international efforts to achieve disarmament and to maintain and strengthen international peace and security;"

"2. *Recommends* that the report of the Independent Commission on Disarmament and Security Issues be duly taken into account in ongoing and future disarmament efforts;"

"3. *Requests* the Secretary-General, with the assistance of qualified governmental experts, to carry out a comprehensive study of concepts of security, in particular security policies which emphasize co-operative efforts and mutual understanding between States, with a view to developing proposals for policies aimed at preventing the arms race, building confidence in the relations between States, enhancing the possibility of reaching agreements on arms limitation and disarmament and promoting political and economic security;"

"4. *Invites* all States to submit to the Secretary-General, not later than 1 April 1984, their views on the content of such a study and to co-operate with him in order to achieve the objectives of the study;"

"5. *Requests* the Secretary-General to submit the final report to the General Assembly at its fortieth session."

The subjects of this study are basic concepts and policies of security. It includes consideration of several specific questions, such as the meaning of security, security perceptions and needs in the context of contemporary circumstances, the relationships between international, regional, national and individual security concerns, and international security in connection with individual national security policies. The study attempts to address some of these issues in the belief that an understanding of the broader scope of global security should make it possible for States to deal more effectively, both individually and collectively, with current problems and threats to peace.

In principle, security is a condition in which States consider that there is no danger of military attack, political pressure or economic coercion, so that they are able to pursue freely their own development and progress. International security is thus the result and the sum of the security of each and every State member of the international community; accordingly, international security cannot be reached without full international co-operation. However, security is a relative rather than an absolute term. National and international security need to be viewed as matters of degree.

The study of security concepts and policies arises from several major developments in international relations. Force continues to be widely used as a means of promoting national security. Developments in science and technology and military strategy are driving the arms race, particularly in the nuclear field, to new heights and are thus increasing the dangers of nuclear war. New weapons systems and technologies, such as anti-satellite systems, laser and particle-beam weapons and long-range cruise missiles are significantly altering the composition of the military relationships among the major Powers. In addition, the international diffusion of advanced military technologies and military capabilities is exacerbating the dangers of international conflicts. Meanwhile, the process of negotiation on measures of arms limitation and disarmament has so far achieved very little and lagged far behind arms technology developments. Issues relating to international peace and security are prominent among matters dealt with in various organs of the United Nations, such as the Security Council, the General Assembly both in its regular sessions and in special sessions devoted to disarmament, in subsidiary bodies of the Assembly, particularly the First Committee and the Disarmament Commission, as well as in the Conference on Disarmament at Geneva. Through the years the General Assembly of the United Nations has adopted by consensus a number of documents on this important subject.

In addition to various deliberations on the question of international peace and security within the United Nations framework, a series of expert studies, carried out by the Secretary-General with the assistance of qualified experts, has further demonstrated the efforts of the united Nations devoted to this important subject.

In addition to these worsening military developments, there are serious new challenges to global political and economic problems. The emergence of new centres of political and economic power, resource scarcities, trade deficits, financial debts, over-population and threats posed by natural calamities and environmental degradation have combined to create hitherto unforeseen problems in the period following the Second World War. New actors, new issues, more complicated linkages between old issues all tug at the fabric of international relations. These circumstances challenge the capacity of the international community to adapt to the rapidity of global change and indeed create growing challenges in all aspects of human activities. As pointed out by the Secretary-General, they have placed the world on the thin margin between catastrophe and survival. The shadow of nuclear war has given a historically unprecedented and urgent dimension to the concerns for global security.

However, if the current situation is filled with danger, it is also filled with opportunity. At the very time when the consequences of nuclear war and the dangers of instability are greater than ever, so also are the potential rewards of co-operation and mutual understanding. Thus, the conditions that pose new threats also provide the incentive to search for new means of attaining security, new efforts to build a more stable world capable of accommodating global change peacefully, achieving arms reduction and disarmament, enhancing respect for sovereignty and human rights, and solving economic problems.

In addition to various efforts made within the United Nations framework, security-related analysis has been the subject of both individual and collective endeavours. This is a result of the growing concern with security in the nuclear age that has led to the formation and the growth of popular peace movements. An important example of documents prepared by non-governmental organisations is the report of the Independent Commission on Disarmament and Security Issues.

One nation's security is often another's insecurity, and between such diverging perceptions there is often little room for compromise and negotiation. Against the range of perceived threats and

vulnerabilities that enter into the calculations of those entrusted with the safety and prosperity of individual nations, the logic of co-operation and accommodation often counts for little. The attempt to review concepts of security has never been so timely and the need for defining norms of international behaviour never more urgent.

The purpose of this study is to encourage national policy-makers to look into the problem in its entirety, to see the growing interactions between issues and to understand that the security of nations can no longer be divorced from the security of the entire international community of which they are an ever more integral part. In view of the militarily important positions of the Union of Soviet Socialist Republics and the United States of America, it is recognised that their support of this approach to security is particularly significant. However, the objective of ensuring security for the world requires the endeavours of every member of the international community. It will therefore be the task of all nations to weigh the recommendations contained in this study and to translate them into national policies.

OVERVIEW OF SECURITY CONCEPTS

Concepts of security are the different bases on which States and the International community as a whole rely for their security. Examples of concepts are the "balance of power", "deterrence," "peaceful coexistence" and "collective security." Security policies, on the other hand, are means to promote security, such as disarmament and arms limitation arrangement or the maintenance and development of military capabilities. There is no clear-cut line between a "concept" and a "policy" and it is not necessary to define one as long as the general thrust is kept in mind.

Any discussion of security concepts is complex and, understandably, controversial. It concerns important and sensitive political issues. The perspectives differ. Even the most basic definitions and perceptions may be subject to controversy. Nevertheless, the need to discuss these issues is real if mutual trust, respect and understanding are to be enhanced. This discussion should take place on the broadest possible basis. No nation should withdraw from this challenge, but contribute to efforts that seek to identify the common ground between nations.

This endeavours to give an overview of various security concepts and approaches through which States have striven to maximize their national security. In this context, the relationship of such concepts, policies and principles to the broader issues of international security

will also be considered. The discussion of those security concepts, principles and policies in this chapter is descriptive. The order in which they are listed is without prejudice with regard to their validity, importance or priority.

A. Concept of Balance of Power

In one form or another, the "balance of power" has been a feature of international relations since the advent of the state system. Although the meaning of the term "balance of power" appears self-evident, it may be understood in several ways. It may describe the general character of an international system where States, in the absence of a higher authority regulating relations between them, seek security by creating power arrangements that reduce the risk of attack upon them, a process that has tended to produce offsetting coalitions against emerging concentrations of power anywhere in the system. It may refer to a situation in which equivalent power is held by two or more nations or groups of nations and to a policy of promoting the creation or preservation of such equivalence in power. Also, it is sometimes understood as a system of international relations in which agreed arrangements are made by States concerning the operation and adjustment of their power relationships, which may be reflected either in a lower or higher level of armaments.

The concept of balance of power had its heyday in the eighteenth and nineteenth centuries. In Europe, the concept was expressed as a multiple balance among at least five great Powers, any combination of which was considered capable of neutralising an aggressor. The system had no central organisation. However, the concept suffered disrepute during the first half of the twentieth century.

Various problems are inherent in the balance of power concept. In addition to the difficulty of defining and measuring "power", the concept implicitly legitimizes the use of force in international relations. Furthermore, in their pursuit of security States often try to create and maintain a "favourable" balance of power, i.e. a preponderance of power for themselves, which adds to international tension and stimulates arms races. The balance of power as a system was not capable of dealing with the security needs of all States. It often produced equilibrium between the great Powers but tolerated both territorial annexations in Europe and imperial expansion in regions of developing countries.

The relative balance between countries in a region is a factor that States consider in addressing their security concerns. The perspective

of a small and weak State is different from that of a major Power, and also depends on whether the State is a member of an alliance or not. Major powers can influence and upset the balance, while, very often, small nations do not have many options but to adjust to the situation and to try to stay out of the struggle for power and influence as best they can. Often they have become the victims of the power struggle and of situations when the balance is upset.

The balance of power concept has often been the basis for the formation of military alliances. However, the various alliances that have been formed in the years since the Second World War have been the product of a range of causes. In existing international conditions, a number of States, including many smaller and less powerful ones, see substantial value in arrangements with other countries for the provision of mutual assistance in the event of an armed attack against any of them.

The roots of the present arms race are many and complex. To a large extent they can be found in political and socio-economic differences between the countries from the two groups of States that later came to form the two main alliances. In political terms, the tensions between East and West still constitute the central feature of the present arms race.

The post-war alliance system has not been able to eliminate the essential dilemma of security in the nuclear age: the problem of ensuring mutual security. Any measure designed to improve the military security of one side may weaken the security of the other. The post-war alliances have been able to increase their collective military strength but not to solve the problem of insecurity in the international system, especially in the nuclear age. States members of the Warsaw Treaty have proposed on various occasions the simultaneous dissolution of their alliance and the North Atlantic Treaty Organisation, and, as a first step, their military organisations.

B. Concept of Deterrence

According to the advocates of this concept, deterrence is a security concept whose objective is to dissuade a potential adversary from initiating war, by threatening the use of force in order either to deny an adversary from gaining his objectives by military means or to punish the adversary should he seek to do so. In effect it seeks to persuade an adversary that the risks and costs of acts of aggression will exceed any gains that might be obtained from such acts. If war is not avoided, deterrence has failed.

Deterrence has probably been practised since the earliest stages of human existence. Although the concept of deterrence is not supported by all the major Powers or for that matter by various other countries, it remains an important concept because, with the proliferation of nuclear weapons and the growth in the size and destructive capacities of arsenals of conventional weapons, the pursuit of national policies designed to sustain deterrence inevitably has major implications for other countries and for broad international security.

In the view of some States, conventional deterrence depends for its effectiveness primarily on the possession by States of military capabilities that are structured for self-defence of their national territory, so as to deny an adversary the prospect of securing territorial, political or economic gains by the use of military force. In their view nuclear deterrence, in contrast, relies mainly on the possession of offensive nuclear capabilities that would be used to punish an adversary in the event that that adversary were to initiate conflict. Some of them consider that some additional capabilities may also be needed, such as those that would enable retaliatory attacks to be conducted against military installations in an aggressor State's own territory.

In the view of some other States, conventional deterrence is based on the same negative features as nuclear deterrence. They consider that the creation of highly precise weapons of great destructive power on the basis of the most modern technology, which in their destructive capacity approach nuclear weapons, lead to lowering the threshold between conventional and nuclear deterrence; the plans providing for the use of such weapons by a nuclear weapon State or by its ally against targets in the territory of a presumed adversary would lower the "nuclear threshold" and would inevitably increase the risk of nuclear war.

A distinction that can be made between conventional and nuclear deterrence relates to their consequences, should deterrence fail and conflict eventuate. Although failures in conventional deterrence could well result in wars causing enormous devastation, failure of nuclear deterrence would threaten the very survival of humankind. As the possibility that nuclear deterrence might fail cannot be ruled out, the viability and implications of this concept of security are of major concern to all.

The notions of "balance" and "parity" play an important role in the relationship between East and West and in nuclear deterrence. However, these terms are interpreted in different ways. Sometimes

the "balance" is calculated on the level of a region or on the level of specific weapon systems. Sometimes, it is interpreted on the global level, taking into account conventional and nuclear forces and allowing for the wide difference in the structure of deployed weapons. "Parity" is sometimes defined as a situation when neither side possesses the capacity for a "disarming" nuclear missile strike; if either side became the victim of nuclear aggression it would preserve sufficient means to deal a retaliating blow to the aggressor. It can also, however, refer to quantitative and qualitative aspects of the nuclear arsenals of the two sides.

The concept of nuclear deterrence is subject to great controversy. In the following paragraphs an attempt is made to summarize the differing views on this concept.

Some States that are proponents of nuclear deterrence consider that possession of a capability to retaliate with nuclear weapons has been and is likely to remain a virtual guarantee preventing the outbreak of any major conflict—either conventional or nuclear—among the nuclear-weapon States. They argue that the prospect of mutual devastation that each would suffer from nuclear conflict gives all concerned a fundamental interest in the avoidance of war. They note in this regard the absence of armed conflict in Europe or between the United States and the Soviet Union for 40 years as *prima facie* evidence of the effectiveness of nuclear deterrence as a means of preserving peace. Decisions to acquire nuclear weapons are justified with what they perceive as requirements to deter war. It is central to the concept of deterrence that force would be used only in response to an attack by an adversary. Furthermore, the proponents argue that nuclear deterrence serves not only to deter war but also to compel both sides to seek to avoid situations in which their vital interests may become directly opposed.

Many opponents of the concept of deterrence reject the concept out of hand. They challenge its basic assumptions. In their view, the doctrine of deterrence is by nature aggressive and relies on force and provides a basis for an unrestricted arms race, particularly the nuclear arms race. They argue that the nuclear deterrence policy pursued by some States ranks first in their approach to agreements on disarmament, especially to a comprehensive test ban treaty, a nuclear weapon freeze and non-first-use of nuclear weapons. Furthermore, they hold the view that it also feeds the arms spiral in the conventional field and firmly believe that deterrence objectively leads to a higher risk of nuclear war and more tensions in international relations. This

concept of security, they conclude, entails an unprecedented threat to human survival.

Some other States, though critical of various aspects of the concept of nuclear deterrence, regard it as being the only reliable arrangement against nuclear war at present in operation. Pending the development of effective collective security arrangements and major reductions in nuclear arms, these States consider that it is important to assist in the maintenance of the system of nuclear deterrence because of the importance of the contribution they consider it makes to international stability. Without such stability, they consider that arms reduction agreements and progress toward effective collective security arrangements would be impossible.

Many other States, which do not possess nuclear weapons, may accept conventional deterrence as a means for achieving national security but have serious doubts about the concept of nuclear deterrence. As long as nuclear weapons exist national security planners must develop concepts to guide decisions on -nuclear weapons. These States are of the opinion that nuclear weapons do not serve any military purpose and that as long as nuclear disarmament is not achieved, any nuclear weapons concept must assure the avoidance of nuclear war. These States question the capability of the concept of nuclear deterrence to serve this purpose in the long-term perspective. For one thing, they argue that nuclear deterrence cannot be made foolproof. The doctrine provides no guarantee against irrational human behaviour or the malfunctioning of command and control systems. They further challenge the proposition that the absence of nuclear war so far can be attributed to nuclear deterrence.

They also believe that nuclear deterrence has not prevented intervention by great Powers in developing countries and may have served to disperse great Power conflicts to these developing areas. In their view the arguments about the peace-keeping effects of nuclear deterrence may influence decisions regarding possible acquisition of nuclear weapons of non-nuclear-weapon States and have a negative influence on the non-proliferation regime. They believe that the stability of nuclear deterrence is constantly threatened by technological advances. The concept, they argue, implies a complacency with nuclear weapons and more and more serves to vindicate decisions to expand nuclear weapons programmes; nuclear deterrence has not been conducive to reductions in armaments. They feel that inherent in the concept is a strong element of offensive threat and mutual insecurity

that breeds suspicion and fear; this hampers efforts to build confidence and reduce tensions between States.

The present level of nuclear arsenals, all but a fraction of which is in the hands of the two leading military Powers, is enough to destroy human civilisation. Notwithstanding the differences in the nuclear weapons policies of the States that possess such weapons, the fact remains that in certain circumstances they may be used. No nuclear-weapon State has completely renounced the possibility of their use. Any use of nuclear weapons is at the same time a threat against all mankind. Nuclear warfare, if it were to occur, would have consequences affecting not only the nuclear-weapon States and their allies. The assured destruction would not be mutual between the adversaries, but global. Among the non-nuclear-weapon States there is therefore a growing sense of insecurity and of loss of their right to determine their own destiny. They feel that they are unjustly exposed to the nuclear threat despite the fact that they are not taking part in the nuclear arms race.

C. Equal Security

Equal security is not a security concept but a principle for bilateral arms negotiations that parties may agree upon. For example, in a joint communique issued on 29 May 1972 the United States and the Soviet Union declared their intentions to limit strategic offensive arms "and to conduct them [their negotiations] in a spirit of goodwill, respect for each other's legitimate interests and observance of the principle of equal security."

This principle would seem to embrace the notion that neither State has the right to claim exclusivity or to demand for itself any special privileges or advantages. Indeed, it has been stated that mutual security between the two major nuclear-weapon States can only be assured by equality. However, questions have been raised as to its exact meaning and wider applicability. Critics maintain that this principle does not address the security concerns of medium-sized and small States, particularly in the light of the wide disparities in military capabilities that exist in the world.

D. Concept of Collective Security

The concept of collective security, as understood in this study, is based on a global commitment to international peace and security undertaken as a legal obligation of all nations. It is the first attempt to institutionalize and enforce the rule of international law to enhance

the security of all nations. The international community, acting together, is committed to move promptly to encounter any act of aggression by one nation against another.

Collective security implies an acknowledgement that security is indivisible. It provides protection of national interests and sovereignty in a collective manner and leads to the strengthening of international security. As a concept it aims at a broader objective than just the absence of war by taking into account the wider requirements of international peace and security. It is based on renunciation of force, except in self-defence, commitment to the peaceful settlement of international disputes and obligation to support collective measures, both military and non-military, to defeat aggression.

A major problem with the concept of collective security is that on a number of occasions States have been reluctant to fulfil their obligations, which is the basic condition for the functioning of the system. In the case of the League of Nations this lack of political will was aggravated by the absence of an effective enforcement mechanism and by the lack of universality in the League.

Within the United Nations special voting powers have been accorded to five States as permanent members of the Security Council. Collective security action by the United Nations requires the concurrence of the five permanent members of the Council: a negative vote by any one of the five States "vetoes" the proposed action. However, the "veto" provision reflects the original assumption that the great Powers would maintain a co-operative working relationship among themselves and, therefore, only use the veto in exceptional circumstances. In practice, however, disagreements between the permanent members have in a number of cases led to the use of the veto, which, in turn, has prevented collective security action. The view has been expressed that the veto power has been abused. Another reason why the collective security system of the United Nations has not always functioned as effectively as expected is the lack of political will to co-operate.

E. Neutrality

One principal means of promoting national security has been the pursuance of policies of staying outside military alliances. The policy of neutrality practised by a few, mainly European, countries is one such policy. Historically, a function of great Power relations and armed hostilities in Europe, it has currently evolved in response to the East-

West conflict. In strict usage, the term neutrality is applicable only in times of war, indicating the legal status of a State that has declared itself neutral in relation to the belligerents during armed hostilities. The rights and obligations of neutrals in times of war are laid down in international law. In order to remain neutral in war a State abstains from participation in the war efforts of the belligerents. In a war situation, the Hague Conventions of 1907 and 1912 have to be taken into account. As long as a State acts in accordance with the international rules on neutrality, international law safeguards the status of neutrality. There are no rules of international law concerning how a neutral State must act in peace-time. Neutral States are thus not required to refrain from taking a position on political, economic or social issues facing the international community.

Neutrality in war and policies during peace-time are necessarily connected. In some instances, neutrality has been confirmed by international guarantees or reinforced through constitutional arrangements. Most importantly, however, the neutral States avoid such peace-time commitments as might jeopardize the possibility of upholding neutrality in war-time and therefore do not participate in military alliances. Also in other respects a policy is pursued that inspires and sustains the confidence in the determination and ability to remain neutral and independent in war-time.

The pursuit of a policy of neutrality aims at ensuring the security of neutral countries in accordance with their national interests. One basic characteristic of a security policy based on neutrality is that it is not offensive. The military forces of neutral countries are designed to make credible the commitment to uphold their neutral status in war.

Because of their independence from military alliances neutral States have been able to contribute substantially to reducing international tensions and antagonisms in their regions and on a larger scale. Through the United Nations, the Conference on Security and Co-operation in Europe and other international forums, neutral States have taken an active part in the processes of co-operation, mediation and peace-keeping.

F. Non-alignment

Non-alignment is not merely a policy of Governments but also a movement of the peoples of non-aligned countries. A number of newly independent nations emerged in the post-war era. During the same period the power and rivalry of military alliances also increased. In

this climate of the cold war, it was only natural that non-aligned nations should get together to protect themselves from its consequences. They did not wish to take sides in a conflict from which they had little to gain and much to lose. The realisation of this common danger, which was nothing short of a danger to their newly won independence, persuaded them to co-ordinate their perceptions and policies on a more regular basis. Non-alignment may be seen as a response not only to the cold war that characterised the period after the Second World War, but also to the challenges of the process of decolonisation, especially in Africa. It has reacted against the dangers inherent in great Power struggles, military alliances and the arms race, voiced its opposition to colonialism and expressed a reaffirmation of the principle of the equality of all nations in the international system. The Bandung Conference of Asian and African countries, held at Bandung and Indonesia in 1955, was an important milestone in Afro-Asian history and some of the ideas were later taken up by non-aligned nations.

In developing the concept of non-alignment, a number of political leaders from the countries concerned made a considerable contribution to this concept with the following basic elements: (a) staying out of military blocs or other forms of great Power entanglements; (b) working towards defusing international tensions and promoting peace; (c) peaceful coexistence and peaceful co-operation among States irrespective of their social or political systems; (d) support for people struggling for freedom from colonialism, opposition to racism, *apartheid*, etc.; (e) support for disarmament, especially nuclear disarmament; (f) working towards a more just and equitable international order. These elements formed the core of the non-aligned policies in the 1950s and 1960s and constituted rallying posts for the non-aligned movement as a whole.

The first Conference of Heads of State or Government of Non-Aligned Countries was held in Belgrade, Yugoslavia, in 1961, with 25 countries participating and 3 countries represented by observers. At the Belgrade Conference, a number of issues related to international peace and security as well as social and economic development were considered, particularly the questions of nuclear disarmament and a nuclear test ban. The appeal of non-aligned countries on the nuclear test ban made an important contribution to the conclusion of the partial test ban treaty of 1963. The Heads of State or Government of participating countries adopted a declaration that upheld the following principles:

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- (a) a new world order should be based on co-operation between nations and founded on freedom, equality and social justice for the promotion of prosperity;
 - (b) lasting peace can be achieved only if the domination of colonialism-imperialism and neo-colonialism in all their manifestations is radically eliminated;
 - (c) to eradicate the source of conflict threatening world peace nations should accept and practise a policy of peaceful coexistence in the world;
 - (d) all peoples and nations have to solve the problems of their own political, economic, social and cultural systems in accordance with their own conditions, needs and potentialities;
 - (e) peoples and Governments shall refrain from any use of ideologies for the purpose of waging cold war, exercising pressure or imposing their will.

In addition, they stated that non-aligned countries "do not wish to form a new bloc and cannot be a bloc" and considered that "under present conditions, the existence and the activities of non-aligned countries in the interests of peace are one of the more important factors for safeguarding world peace" These principles laid down in the Belgrade and subsequent conferences have constituted the basic platform of the non-aligned movement.

At the same time, there have been some] adjustments in accordance with changing international situations during the past decades. For instance, the second summit, in 1964 in Cairo, put forward a programme for peace and international co-operation and focused attention on the as yet unfinished struggle for the liberation of Africa. These ideas were carried a step forward at the 1970 Lusaka summit where focus was placed on peace, independence, development, co-operation and democratisation of international relations. Apart from giving greater attention to economic issues, the Lusaka summit made an appeal for the creation of a zone of peace in the Indian Ocean. It also helped consolidate the non-aligned position on the law of the sea issue at the United Nations. The Algiers summit in 1973 laid stress on making detente a wider concept, applicable to all parts of the world, and not confined to a particular region.

The Colombo summit in 1976 called for the preservation of the essential character of non-alignment and the strengthening (of its resistance to politics of pressure, and rejected the notions of an international order based on power blocs, balance of power and spheres

of influence. The Havana summit in 1979 confirmed the concept of non-alignment and called for global negotiations for the new international economic order. A unique feature of this summit was the special attention given to issues in Latin America and the Caribbean. The New Delhi summit in 1983 particularly underlined the importance of peace, nuclear disarmament and development. For the past decades, the non-aligned countries have made considerable efforts and contributions to the question of nuclear disarmament both within and outside the framework of the United Nations.

In addition to the political aspect of non-alignment, the economic factor constituted one of the main motive forces and later became the strongest motive that impelled the non-aligned countries to co-operation and joint action. More recently, the movement has become a forum for promoting the new international economic order based on equity, co-operation and interdependence.

The Non-Aligned Movement has been active in formulating and pursuing the interests of developing countries within the international system, including the United Nations and regional organisations. Non-alignment is thus not an expression of non-involvement but a means of attaining security goals within an international system dominated by the opposing political and military alliances.

The Non-Aligned Movement has made several positive contributions to international security. Individual countries or groups of non-aligned nations have sought to help resolve specific conflicts among members of the Movement, as, for example, the Iran-Iraq war. The Movement has strengthened the independence of new nations by enhancing respect for their positions in international affairs. Moreover, it has provided an effective means of gaining collective weight in international forums to press for important issues of racial, political and economic justice. More importantly, by offering an alternative to bloc politics, non-alignment has helped to avoid or reduce tensions in the international system.

G. Peaceful Coexistence

Since the First World War, the concept of peaceful coexistence has been put forward as a fundamental norm in international relations. In the light of the complexity of the contemporary world, with some 160 independent countries of different peoples, language, culture, customs, ideology, political institutions and socio-economic systems, the idea of peaceful coexistence is designed to accommodate the perceivable conflicts and contending interests among States. Peaceful coexistence

is not intended to mean just passive coexistence, but also active co-operation and understanding among all States on the basis of equality and mutual benefit. Furthermore, it could also be regarded as an effective and practical contribution to confidence-building among nations. In the opinion of its proponents, peaceful coexistence applies universally to all States regardless of their size, international status or political and socio-economic systems. They also underline that the threats and problems mankind is facing now, in the nuclear age, make it a matter of extraordinary importance that all States meet the demands inherent in the principles of peaceful coexistence; this would be an important contribution to the strengthening of international security.

H. Common Security

The idea of common security was put forward in the report of the Independent Commission on Disarmament and Security Issues (A/CN. 10/38 and Corr.I). The Commission stated that "a doctrine of common security must replace the present expedient of deterrence through armaments. International peace must rest on a commitment to joint survival rather than a threat of mutual destruction".

The Independent Commission on Disarmament and Security Issues convened with the purpose of finding new ways of thinking about and organising for security in response to the failure of mutual deterrence to lessen international insecurities. The Commission began with the premise that threats to security—the conventional and nuclear arms races, resource shortages, environmental degradation, under-development—are threats that nations increasingly have in common, and that solutions should therefore be sought in common. As the Commission reported, the key to security lies in the willingness of nations to organize their security policies in co-operation with each other.

The Commission recommended that the process of co-operation begin with relations between the Soviet Union and the United States and their respective alliance systems, in particular, with negotiations over conventional and nuclear arms limitation and with policies to encourage *rapprochement* and normalisation of relations between the super-Powers. The objective of these efforts, the Commission noted, should be the re-establishment of peaceful relations, policies of restraint, reversal of the arms race and the implementation of confidence-building measures between the Soviet Union and the United States.

The Commission also proposed that the search for co-operative solutions should include the developing countries, which share the risks and therefore the responsibilities for peace. The Commission recommended measures to mitigate the circumstances that feed conflict and crisis in the developing countries and pose in threats of great Power involvement. In particular, the Commission addressed the problem of underdevelopment, which fuels the discontent that leads to expending arms budgets, civil conflict and international expanding international destabilisation and war.

The concept of common security has relevance first of all to the relationship between the nuclear alliances in general and to the relation between the Soviet Union and the United States in particular. Common security is a recognition of the fact that nuclear weapons have changed not only the scale of warfare but the very concept of war itself. In the nuclear age war cannot be an instrument of policy. A nuclear war would have no winners, only losers. There is no defence against nuclear weapons. The only protection against nuclear destruction is the avoidance of nuclear war itself. Even ideological opponents have a shared interest in survival and, thus, in the avoidance of war.

Common security as a concept is based on two preferences: for international over national means of achieving security; and for means that are peaceful over those that rely on the use or the threatened use of force. These extremely venerable preferences are interpreted in the light of modern destructive technologies, principally nuclear but also "conventional", chemical and biological weapons. On the other hand, the existence of modern weapons makes it likely that the costs of resorting to military force (certainly to nuclear force) would exceed the benefits; no one would win a nuclear war. On the other hand, the effects of the use of modern weapons would cross international frontiers. No country would be secure from the consequences of nuclear war: "national" and "international" interests coincide in the need to prevent war.

The notion of common security is founded on the assumption that in an age of interdependence no nation can find security by itself. Thus, the goal of common security is to begin a positive process that will eventually lead to peace and disarmament, and that will tap the recent outpouring of popular concern over the dangers of war. The results of this process would be a safer, more secure international order: a world with no nuclear weapons, with peace and security maintained at lower levels of conventional arms, and with increased national and international resources reallocated to the purpose of improving the quality of life.

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Towards Global Security

In principle, security is a condition in which States consider that there is no danger of military attack, political pressure or economic coercion, so that they are able to pursue freely their own development and progress. International security is thus the result and the sum of the security of each and every State member of the international community; accordingly, international security cannot be reached without full international co-operation. However, security is a relative rather than an absolute term. National and international security need to be viewed as matters of degree.

Concepts of security are the different bases on which States and the international community as a whole rely for their security. Examples of concepts are the "balance of power", "deterrence", "peaceful coexistence" and "collective security". Security policies, on the other hand, are means to promote security, such as disarmament and arms limitation arrangements or the maintenance and development of military capabilities. There is no clear-cut line between a "concept" and a "policy" and it is not necessary to define one as long as the general thrust is kept in mind.

Any discussion of security concepts is complex and, understandably, controversial. It concerns important and sensitive political issues. The perspectives differ. Even the most basic definitions and perceptions may be subject to controversy. Nevertheless, the need to discuss these issues is real if mutual trust, respect and understanding are to be enhanced. This discussion should take place on the broadest possible basis. No nation should withdraw from this challenge, but contribute to efforts that seek to identify the common ground between nations.

The different security concepts have as a common objective the protection of national security. They have evolved in response to the

need for national security and as a result of changing political, military, economic and other circumstances. Concepts of security contain different elements such as military capabilities, economic strength, social development, technological and scientific progress as well as political co-operation through the use of bilateral and multilateral diplomacy, also involving international organisations. Concepts of security may emphasize any one of these elements or a combination of them. Concepts of security may stress national unilateral action to maintain security or multilateral co-operative approaches. Traditionally concepts of security have emphasized unilateral steps to reduce national vulnerabilities through military defence. A number of concepts, such as the collective security concept contained in the United Nations Charter, the concept of peaceful coexistence between all nations, non-alignment and common security, place emphasis on political co-operation.

All nations have the right to maintain military forces for national defence and they have the right to decide on matters concerning their own security. But if nations pursue security policies that rely primarily on their own military strength and narrow national interests, serious problems may arise for international security. Individual States may temporarily achieve an increase in their security through the development of their military capabilities but they will ultimately be negatively affected by offsetting measures undertaken by other States and the resulting deterioration in international security. International security requires a balance between military and non-military elements and between national and international interests.

It has been estimated that there have probably been over 150 armed conflicts since 1945. Estimates of casualties from all wars fought since 1945 range between 16 and 25 million killed. In addition to actual deaths and human suffering, the costs of conventional wars must be measured in terms of the destruction of economic infrastructure, lost educational opportunities and damage to prospects for economic growth. Recent wars have produced very large waves of refugees, comprised principally of women and children.

National and international security are becoming increasingly interrelated, thereby challenging the notion that security is primarily a function of national power or military and economic strength. Searching for solutions to the problem of insecurity, many nations increasingly find themselves face-to-face with circumstances beyond their direct control such as a structural economic crisis, and global

economic, population, environmental and resource trends. At the same time, elements such as the international tensions and armed conflicts in different regions of the world, the spiralling nuclear and conventional arms race and the continuation of colonialism and racism, are also affecting the search for security. Global interdependence has created a situation in which actions not only by major Powers but also by other nations can have major regional or even international repercussions.

Interdependence is, in particular, underscored by the fact that all nations face universal threats posed by the nuclear arms race. As long as nuclear weapons exist their use in certain circumstances cannot be totally discounted. No nuclear-weapon State has completely renounced the possibility of their use. The assured destruction that would follow a nuclear exchange would not be mutual but global and use of nuclear weapons would threaten all mankind. Non-nuclear-weapon States therefore feel a growing sense of insecurity and loss of their right to decide on their own destiny. They feel unjustly exposed to the nuclear threat while taking no part in the nuclear arms race, which therefore becomes a matter of crucial concern to the non-nuclear-weapon States. No State can now, by itself, attain absolute security.

In reviewing various concepts of security and assessing the elements required for global security, the Group has generally shared the following common understandings:

(1) All Nations have the Right to Security

All States have, regardless of size, geographic location, social system, political or ideological belief, or level of development, a legitimate right to security. This means that the security needs of one State must not be defined in such a way as to undermine the legitimate security needs of others. Definitions of national security that require the subordination or subjugation of other States and peoples are not legitimate. Security implies not only freedom from war and from the threat of war, but from any form of covert or overt intervention. The security of small States is as important as the security of large States.

(2) The Use of Military Force for Purposes Other than Self-defence is not a Legitimate Instrument of National Policy

The right to use military force in self-defence is recognized and reaffirmed in the Charter of the United Nations and military preparedness is no less a basic feature of national policy than it ever was. However, the use of force to gain security at the expense of other States is unacceptable. It is evident that a competitive, open-ended

accumulation of weapons by nations aggravates political conflicts and increases the risk of war and can lead to less, rather than more, security. This has never been more true than in the nuclear age.

(3) Security Should be Understood in Comprehensive Terms

Security policies can no longer be concerned with peace, defined merely as the absence of war, but must deal effectively with the broader and more complex questions of the interrelationship between military and non-military elements of security. It is essential to address underlying political, social and economic problems. A strong emphasis on the military aspects in security policies has increased the tempo of the arms race, exacerbated international tensions and heightened the danger of war. Policies centred on military strength have also diverted attention from other serious threats to global security such as political disorder, problems of development, *apartheid*, denial of the right to self-determination and unequal distribution of resources. The threat of war cannot be dealt with effectively without a prior analysis of and effective measures directed at the roots of international tensions and antagonisms that often give rise to competition in the fields of nuclear and conventional arms. Consequently, a comprehensive approach to security, recognising the growing interdependence of political, military, economic, social, geographical and technological factors, has become essential. Security is equally important at the national and international level and should be ensured at both levels.

(4) Security is the Concern of All Nations

Nuclear weapons have transformed the conditions of security. Ultimately, the fates of all States are affected by the continuing increase in the nuclear arsenals or by failure to negotiate arms limitations. No nation can escape the threat of proliferating challenges to global security. All nations have the right and duty to participate in the search for constructive solutions. As all nations are subject to the ultimate threat of annihilation, all nations must have a say in the quest for international security. In the task of achieving the goals of nuclear disarmament, all the nuclear-weapon States, in particular those among them that possess the most important nuclear arsenals, bear a special responsibility.

(5) The World's Diversities Should Not Constitute Obstacles to International Co-operation for Peace and Security

The world has over 160 independent States. There are wide differences among them with respect to ethnic origins, language,

culture, history, customs, ideologies, political institutions, socio-economic systems and levels of development. In the nuclear age the interest in survival must transcend differences in ideology, political institutions and socio-economic systems. Political conflicts and contending interests among States will not disappear, but they must not be allowed to override the collective interest in survival. The differences in ideology, political institutions and socio-economic systems that currently create obstacles to international co-operation for peace and security must be moderated by strict observance of generally accepted norms for relations between States. It will never be easy to create attitudes of tolerance between political systems based on contradictory ideologies. However, it must be recognized that the constant threat of war prevents the realisation of higher political goals in all nations. The reality of modern war would reduce the accomplishments and the hopes of every political system to nothing. Consequently it is vital that security policies should be adjusted to reconcile national security interests and the requirements of international security. Nations are not expected to give up their ideological and political convictions but ideological differences should not be transferred to interstate relations. There is a need for self-restraint on the part of the States involved.

(6) Disarmament and Arms Limitation is an Important Approach to International Peace and Security

The arms race, particularly the nuclear arms race, has reached an unprecedented level. Currently, Mankind is confronted with a threat of self-extinction arising from the massive accumulation of the most destructive weapons ever produced. To avoid the risk of nuclear war it is necessary to reverse the nuclear arms race. Those powers that possess the most important nuclear arsenals have a special responsibility to the rest of the world to proceed with nuclear disarmament since they have the capability to destroy mankind. Other types of weapons of mass destruction, such as chemical weapons, and the maintenance, expansion and modernisation of large arsenals of conventional weapons add to the dangers facing the world. Agreed reductions of military expenditures would be an important measure in curbing the arms race.

The arms race runs counter to efforts to maintain international peace and security, to establish international relations based on peaceful coexistence and trust, between all States, and to develop broad international co-operation and understanding. It impedes the realisation of the purposes of the United Nations. Arms limitation and

disarmament have thus become the most urgent task facing the international community. No effort should be spared to promote disarmament negotiations to reach the goal of general and complete disarmament under effective international control. Agreement to reduce nuclear and conventional weapons would reduce mutual fears and mistrust and would greatly assist the improvement of political relations between countries.

This review of prevailing security policies leads to the conclusion that nations should move towards common security. A number of proposals to this effect are made in chapter IV. Actions in the following four main areas are of particular importance:

- (a) Renewed efforts in the field of disarmament to reduce the risk of war, in particular nuclear war;
- (b) Maintenance of the rule of law in international relations through the strict observance of the Charter of the United Nations and effective application of the collective security concept;
- (c) Decolonisation and elimination of *apartheid*?
- (d) Political and economic co-operation for development and security.

Renewed Efforts in the Field of Disarmament to Reduce the Risk of War, in Particular Nuclear War

Nuclear weapons pose the greatest danger to mankind. Effective measures to promote nuclear disarmament and to prevent nuclear war must have the highest priority. In carrying out this task, all the nuclear-weapon States, in particular those that possess the largest nuclear arsenals, bear a special responsibility. It is imperative to remove the threat of nuclear weapons, to halt and reverse the nuclear arms race and to prevent the proliferation of nuclear weapons. At the same time, other measures designed to prevent the outbreak of nuclear war and to lessen the danger of the threat or use of nuclear weapons should be taken.

Too often, the use of force is claimed to be in self-defence. The Charter in Article 51 recognizes the right to self-defence only when "an armed attack occurs". The provisions of Article 51, concerning action to maintain or restore international peace in case of armed attack, should be strictly adhered to. Traditional international law relating to armed conflict contains some general principles that in fact

outlaw certain practices in war.

Relevant in this context are, *inter alia*, the principles of distinction between military and civilian objects, the prohibition of causing unnecessary suffering in warfare and the principle of proportionality prohibiting attacks that would be excessive in relation to the concrete and direct military advantages anticipated. Nuclear weapons have introduced a completely new and qualitatively different dimension. It is not conceivable that nuclear weapons could be used in a manner consistent with the principles mentioned above. Further, efforts should be made to include in international law the clear and complete prohibition and total destruction of all nuclear weapons, as well as the clear and complete prohibition on the development, testing, production, stockpiling and use of nuclear weapons.

Improved international security requires a realisation by the two major nuclear-weapon States that they have a common stake not only in survival, but also in the pursuit of common security. Acting towards this goal, the Soviet Union and the United States should also take into account each other's differing interests when determining their respective security policies and seek to manage their relations with each other in such a way as to reduce the risk of war both to themselves and to the rest of the international community. It is of major importance that relations between them be improved and that actions and rhetoric be adjusted to that objective.

The prevention of an arms race in outer space is more urgent than ever before. States, in particular those with major space capabilities, should refrain from development of space weapon systems and take measures to avoid the extension of an arms race into outer space as it would constitute a destabilising factor to international peace and security. As a common heritage of mankind, outer space should be reserved for peaceful purposes.

All nations have a common interest in the maintenance of international peace and security. Military conflicts entail the risk of spreading and escalation. Regional conflicts may escalate into global war. It is, therefore, essential to settle international disputes by peaceful means, to prevent such disputes from developing into armed conflicts and to restrain and seek solutions to conflicts where hostilities have already broken out.

Maintenance of the Rule of Law in International Relations

Through the Strict Observance of the Charter of the United Nations and Effective Application of the Collective Security Concept

Disregard for international law and reliance on force for resolving disputes is dangerous and offers no prospect of finding lasting solutions to the problem of international security. It has led to a situation that is dangerously close to international anarchy. This situation must be reversed. All States must observe legal principles in their behaviour. The basic principles are contained in the Charter of the United Nations, which is the paramount set of principles to which all Member States have subscribed. The Charter of the United Nations must be observed.

The following legal principles are of particular relevance: peaceful settlement of disputes; prohibition of the use or threat of force, and non-aggression; non-intervention in the internal affairs of other States; respect for the independence, sovereignty and territorial integrity of States; respect for the right to self-determination and independence of all peoples.

It is the obligation of all States under international law to abide by these principles. It is vital for the achievement of international security that all States abide by their obligations under international law. If the corresponding provisions of the Charter were strictly observed this would lead to a drastic improvement of the international situation.

One of the main tasks of the United Nations is to maintain and strengthen international peace and security. It has, however, not always been possible to implement its collective, security system to prevent or counter aggression. Steps should be taken to strengthen the effectiveness of the United Nations and to improve its possibilities to fulfil its fundamental task of maintaining international peace and security in accordance with the Charter.

The Security Council has been entrusted with the primary responsibility with regard to the maintenance of international peace and security. The effective use of the Security Council and the collective security system of the United Nations requires consensus among the great Powers. This imposes on them a special responsibility for the effective functioning of the Security Council and the collective security system of the Charter. Implementation of the decisions of the Security Council is central to the effectiveness of the United Nations in this field. Regrettably, many Security Council resolutions remain unimplemented. This is dangerous and detrimental to the authority of

the Council.

Preventive actions by the United Nations are important in order to prevent the outbreak of hostilities. Such actions could offer time for the peaceful resolution of disputes before they develop into armed conflicts. A number of measures should be considered in this regard. The Security Council should consider holding periodic meetings in specific cases to examine and review outstanding problems and crises, thus enabling the Council to play a more active role in, preventing conflicts. The international situation requires an effective Security Council and, to that end, the Security Council should examine mechanisms and working methods on a continuous basis in order to enhance its authority and enforcement capacity in accordance with the Charter.

It is also important to enhance the role of the General Assembly in the maintenance of international peace and security, in conformity with the provisions of the Charter of the United Nations.

It is important that full use be made of the means of peaceful settlement of disputes as provided for in the Charter. For the protection of the security of weaker countries, among the methods for peaceful settlement of disputes those that provide for third party settlement, such as arbitration or reference to the International Court of Justice, could be of value.

Massive and systematic violations of the provisions of international instruments on human rights are likely to exercise a negative influence on international security. All efforts should be made by the international community to prevent such developments.

The United Nations is the forum where all nations have the opportunity to contribute to the process of disarmament. The role of the United Nations in this field should be strengthened not only with regard to negotiations but also with, appropriate arrangements for implementation of disarmament measures.

A large number of States that have become independent since the early 1960s are small with respect to population, territory and economic resources. These States have a limited capacity to organize and guarantee their national security on their own. This makes them especially vulnerable to external attacks or intervention as well as pressure from more powerful States. Although small States comprise a significant proportion of the membership of the United Nations, their security needs have not received the attention they deserve. In

this connection, it is recommended that the United Nations should organize a special study on the security problems of small States. Ultimately, the effective functioning of the collective security system of the United Nations would provide the best protection for small States.

Decolonisation and Elimination of Apartheid

Apartheid and colonialism threaten international peace and security. The evil system of *apartheid* in South Africa, the continued illegal occupation of Namibia by South Africa, and the campaign of aggression and destabilisation being waged by South Africa against neighbouring States constitute serious threats to international peace and security in southern Africa and beyond. The threats to international peace and security arising from colonialism and *apartheid* require resolute and concerted international action. In the particular case of Namibia, it is incumbent upon the United Nations to take urgent measures for the early independence of Namibia in accordance with Security Council resolution 435 (1978) and the United Nations plan for Namibia. Similarly, the eradication of *apartheid* should remain a high priority for the international community. To that end, there is need to adopt comprehensive mandatory sanctions against South Africa. Furthermore, all States should terminate acts of collaboration with South Africa as this only strengthens the South African regime and consolidates the evil system of *apartheid*. In this connection, measures should be taken by all States to ensure the full and effective implementation of resolution 418 (1977) on the arms embargo against South Africa.

Political and Economic Co-operation for Security and Development

Security policies should be based on a comprehensive approach to security. The security of a country depends not only on military but also on political, economic and social factors. Various measures to increase confidence among nations should be considered. In addition to problems of a political and military nature, the world is also confronted with grave social and economic difficulties. Developing countries face especially critical problems in this area. Social and economic factors influence the internal security of a country. Domestic problems may lead to instability in a region, which in turn may affect the international situation. The social and economic development of all nations is important for international security. The North-South

dialogue should be expedited and appropriate measures should be taken in order to bridge the economic gap between the developed and developing countries. The role of the United Nations in this field is particularly important and should be enhanced extensively.

While regional organisations may sometimes offer a suitable framework for pre-empting and solving conflicts and settling disputes, they often lack the means to carry out the measures required. These organisations should therefore be strengthened. The United Nations-should encourage such efforts and lend its co-operation to them for conflict resolution.

International security requires the commitment and the restraint of all nations. While the possession of nuclear weapons imposes a special responsibility, all nations are obliged to observe the fundamental norms of international behaviour embodied in the Charter of the United Nations. The need for self-restraint and mutual respect applies to all States. In the nuclear age, only through national policies of restraint and through co-operative efforts is there a possibility eventually to eliminate the fear of war and global destruction. All nations should devote a determined and persistent effort to strike a balance between national and international interests to secure peaceful relations and co-operation among all States. The spirit and practice of multilateralism needs to be strengthened.

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Defining “Global Security”

A proper definition of security, including the definition of the newer concept of “global security”, must take account of changes in the world situation, including an explicit recognition of past threats and present instabilities. This study attempts to identify these past threats and present instabilities and other changes in the international situation in order to suggest a reconsideration of the entire nature of national and international security. In particular, it considers how security should be defined for the 1990s and into the next century. In doing so, it suggests a set of nine “globalisations” of various aspects of security, which might be part of the definition of “global security.”

Past and Present International Threats

Past international threats have included, for over four decades, the cold war threat of the Soviet Union and the Warsaw Pact; the Soviet domination of Eastern Europe; and various regional crises and wars in the Middle East, the Persian Gulf, South-West Asia, South Asia, South-East Asia, and the Korean peninsula. Now, however, the revolutionary changes in the Soviet Union under President Late Mikhail Gorbachev have led to the end of the cold war; the Warsaw Pact is defunct; and the “falling dominoes” sequence of revolutions in Eastern Europe in 1989 have ended the Soviet domination of Eastern Europe. As to regional crises and wars, while they still exist, their nature and future resolution may have changed as a result of the 1990-1991 Gulf crisis and war.

While these fundamental changes in the international situation have significantly reduced the threat of East-West conflict, problems of security still remain. Indeed, the 2 August 1990 invasion of Kuwait by Iraq provided a timely reminder that there still remain security problems, particularly for those individuals who, in the euphoria over

the end of the cold war, thought that such problems were a relic of the past. In fact, there are several present instabilities that represent potential security problems, some of which are themselves outgrowths of the termination of past threats. The end of the cold war has, in some respects, made the world a more dangerous place.

First among the present instabilities is the danger stemming from the Soviet Union being on the brink of total economic, political, and social collapse. As a result there is the potential for internal insurrection and conflict stemming from power struggles between the union or centre, on the one side, and republic or local authorities, on the other; between different political forces; between different ethnic groups; and between yet other divisions. Their struggles and potential conflict could lead to a civil war, with possible conflicts over the control of weapons, including even nuclear and chemical weapons. In such a situation there could be a danger of an accidental nuclear war. Some Soviet military experts are even currently arguing for the continuation of major military capabilities just in case there will be a Western invasion to quell a Soviet civil war. At the same time, some Western military experts are calling for the continuation of their major military capabilities in the event of a reconstitution of the Soviet threat to Western interests. It would be hard for the rest of the world to avoid involvement in case of a Soviet civil war because of the presence of strategic nuclear weapons and the dangers of accidental launches of these weapons; the problems stemming from huge numbers of refugees; the possible use of international incidents to take pressure off the domestic situation; and the conceivable eventual takeover by a strong man, a new Stalin. This new dictator might foment trouble abroad and resume the cold war for the same reason that Stalin did, namely, the value of a foreign threat in order to justify repression at home, where such repression will be seen as necessary in order to keep the country intact.

Second among the present instabilities is the danger stemming from a civil war in Yugoslavia. In some respects the situation is similar to that of the Soviet Union, involving ethnic conflicts and failed economic, political and social policies, but, fortunately, without the involvement of nuclear weapons. Nevertheless, major-power involvement in the Balkans could lead to a wider conflict, as in the beginning of World War I.

Third is the potential for instability in Eastern Europe, which faces extremely severe economic, political, and social problems. The revolutions of 1989 led to the advent of democratic governments in

most of Eastern Europe, but world history has seen other cases where a first revolution leading to democracy was followed by a second revolution leading to some sort of totalitarian regime, particularly when there is great disaffection and unrealized expectations among the populace. This is precisely the present situation in Eastern Europe. Just as the people of these States have rejected the communist model in view of its failures, some may also reject the democratic model, given its own failures, in favour of, possibly, fascism, which lurks beneath the surface in some of these States. There are yet other types of potential instability in Eastern Europe, including the possible creation of major arms export industries and the development of nuclear weapons in some of these States now that they are free from the domination of the Soviet Union, which formerly had regulated such matters.

Fourth is the potential instability in China following a failed revolution, which has led to disaffection among its population. As in the case of the Soviet Union, there is the potential for civil disturbances and civil war in a nuclear-weapon State, creating the possibility of a struggle for control, or even a loss of control, of nuclear weapons. There could be, in this situation, the deliberate or accidental use of these weapons, with world-wide effects.

Fifth is the potential for conflict on the Korean peninsula, which remains a divided nation even as previously divided nations, including Vietnam, Yemen, and Germany, have been reunited. There is now the potential for the development of nuclear weapons by the Democratic People's Republic of Korea (North Korea), while the Republic of Korea (South Korea) has for some time had the capacity to build such weapons.

Sixth are the remaining instabilities in other regions of actual or potential conflict, including various ongoing civil wars taking place in many places in the world. Of particular concern are the conflicts of the Middle East, which, in fact, extend over the wider area of the Islamic world, from North Africa to South-West Asia, ranging from Morocco to Pakistan.

All of these present instabilities must be taken into account in defining "global security", but there are other changes in the international situation that must also be considered. Of particular importance is the fact that modern systems of communication and transportation have made the planet highly connected and interdependent. As a result of both global instabilities and global interdependencies, traditional methods of ensuring security have

become less and less relevant, and policy-makers and analysts alike are trying to develop new mechanisms for security. The traditional methods apply to military security, largely in the East-West context of the cold war, and mainly to Europe. In fact, now is a time of immense opportunity, a time in which policy-makers can reshape the world. One would have to go back over four decades, to the period immediately after World War II, to find a comparable period of change, uncertainty, and opportunity. The challenge now is to create a new system of global security, reflecting current world realities, particularly the fundamental changes that have occurred in the international system in the last few years.

The “Globalisation” of Security

A necessary step in the further development of security studies will, however, be the most basic one of simply defining “global security”. This study suggests nine aspects of a definition of “global security” in order for the concept to be relevant for the 1990s and into the next century. Each takes the form of the “globalisation” of a certain aspect of security, involving interpreting this aspect of the subject in a global way.

The first globalisation relates to the concept of security itself. Because of global interdependence, it is necessary to treat security from a global perspective, rather than from a national or even an international perspective. Thus, the traditional concepts of “national security” and “international security” must be replaced by the newer concept of “*global security*”, *defined here as the absence of or avoidance of threats to the vital interests of the planet*. The world is so connected and integrated that it is impossible to confine security to national frontiers.

In particular, security is not gained at the expense of another State but, rather, in conjunction with security of other related States. Using the language of economics, security is a type of public good, where more security for others does not diminish one’s own security. In earlier periods, national security was frequently cited as an example of a public good, a type of good for which one person’s consumption of more of the good did not diminish the consumption of the good by another person. Currently, however, this type of interpretation can be given at not just the national level of individual people, but also at the international level of individual nations. Thus, global security, if it can be achieved, is an international public good, for which more security for one nation does not mean less security for another.

The second globalisation relates to the content and substance of security, which must be extended well beyond the traditional military dimension. Global security must treat, as part of its legitimate concerns, the interrelated military, political, economic, environmental, and other threats to the vital interests of the planet. Even within the narrower and traditional definition of security, involving the prevention of military threats to the vital interests of a sovereign nation or group of allied nations, there are broader challenges to global security stemming from military instability, including border and other regional conflicts, internal ethnic conflicts and civil wars, and terrorism. Of particular concern is the possibility of insurrection, confrontation and civil war in nuclear-weapon States, such as the Soviet Union and China, which could lead to nuclear threats, use of nuclear weapons, and even an accidental or inadvertent nuclear war. Beyond these military threats, there are political threats and other threats to the vital interests of the planet that must be treated as part of global security.

The third globalisation relates to the regions of security concern. The major focus of security concerns over the last fifty years has been Europe. Now, however, it is necessary to treat not just the security problems of Europe but also those of other regions, particularly regions of actual or potential conflict in the third world, including the Middle East, South-West Asia, South Asia, South-East Asia, North-East Asia, the Horn of Africa, and Southern Africa.

A major area for global security concern is the Middle East, including the Gulf, in view of its geostrategic location, its oil resources, the weapons in the region, and the several fundamental conflicts and antagonisms of the broader region, which, as noted, extends over the area from North Africa to South-West Asia. The Gulf crisis and war have focused world attention on this region, but it should not be forgotten that the war between the Islamic Republic of Iran and Iraq was, in terms of casualties, the third largest war of the century. There also remain the continuing Arab-Israeli conflict, the problem of the West Bank and Gaza, the issue of the Palestinians, the question of the future of Lebanon, the influence of Muslim fundamentalism, and various Arab-Arab conflicts. The Gulf crisis and the resulting war may, in fact, be only a precursor to a whole series of regional crises into which the United States, the Soviet Union, and other nations could be drawn. It could also be a precursor to a wider North-South conflict, pitting the industrialized North against the developing South economically, politically and, possibly, even militarily.

The fourth globalisation relates to the mechanisms used to achieve security, where an increasingly important mechanism to achieve this goal is that of international cooperation, understood here to mean coordinated action among two or more nations so as to achieve a common goal. Such international cooperation provides a major mechanism for dealing with global problems and achieving global goals, including those of global security.

For example, traditional bilateral Soviet-United States cooperation in the area of arms control and non-proliferation has been extended to cooperation in regional crisis management, including not only in the Gulf crisis and war, but also in Namibia, Cambodia, and other regions. Such Soviet-United States cooperation can be an important step towards wider international cooperation to treat global problems, including not only military threats, but also other threats to the vital interests of the planet. In general, multilateral cooperation is a basic mechanism for achieving global security, where past instances of such cooperation have included the formation of the North Atlantic Treaty Organisation (NATO) and the Warsaw Treaty Organisation (WTO), the nuclear non-proliferation regime, and the Missile Technology Control Regime; the Organisation for Economic Co-operation and Development (OECD) and the G-7 system for international economic cooperation; and the cooperation of allied nations and forces in the Gulf crisis and war. Newer mechanisms of multilateral cooperation will have to be developed to deal with other threats to global security. In fact, international cooperation could represent a new paradigm for global security, replacing earlier approaches to national and international security.

The fifth globalisation relates to the institutions needed to achieve security. To achieve global security it is necessary to rethink the institutions that could be used to solve the collective action problem of obtaining the optimal amount of a public good. In particular, global security must reconsider the role of regional and international institutions as a means to achieve the goal of global security. The United Nations has emerged in the recent past as an important body for settling regional conflicts and for countering aggression, the role that, in fact, was originally intended for it, particularly through the Security Council. At the regional level, the Conference on Security and Co-operation in Europe has the potential of playing a much greater role in European security, and similar new institutions could be developed for other regions of the world. Similarly, existing and new regional and international institutions could play important roles in

addressing both military and non-military threats to the vital interests of the planet.

The sixth globalisation relates to the changes in the distribution of power. Global security must take account of such changes in the distribution of power that have occurred in the international system. The bilateral era of "super-Powers" is over, given the fundamental changes that have occurred in the Soviet Union and the less fundamental but nevertheless substantial changes that have occurred in the United States, including budget and trade deficits and reductions in defence budgets. In its place is the multilateral world of several global Powers. The Soviet Union and the United States will continue to have important influences on global security, and the continued transformation of their bilateral relationship from one of confrontation to one of cooperation could play a major role in ensuring global security. Meanwhile, the economic and political integration of Europe has resulted in its becoming truly a global Power militarily, politically, and economically.

Both Western Europe and the newly emerging Central Europe will be dominated by the newly unified Germany, which is the major Power of Europe in terms of its economic and financial strength, its population base, its geostrategic situation, its military capabilities, and its leadership abilities. At the same time, Japan has become a major global Power in terms of its economic impacts, and it is beginning to have major impacts in other areas as well, such as in its political influence. China also must be taken into account as a major global Power in view of its population base, its economy, its geostrategic situation, and its potential to influence other States. Thus, any study of global security will have to account not just for the United States and the Soviet Union, but also for Europe, Japan and China, which are playing increasingly important roles in addressing military, economic, environmental, and other threats to the vital interests of the planet.

The seventh globalisation relates to arms control as one approach to global security. The main emphasis of arms control over the last two decades has been on bilateral approaches to strategic and intermediate-range nuclear weapons, as exemplified by the SALT (Strategic Arms Limitation Talks), INF (Intermediate-Range Nuclear Forces), and START (Strategic Arms Reduction Talks) negotiations and treaties. It is now necessary to treat a broader global agenda for arms control, involving not only these bilateral approaches to nuclear weapons, but also multilateral and unilateral approaches to nuclear,

chemical, and conventional weapons on a world-wide basis. Furthermore, the traditional bilateral approaches might be modified to become a process, moving from arithmetic "bean counting" to a more conceptual approach, emphasising strategic stability and moving from compartmentalized bilateral forums to a broader multilateral forum for negotiations. As to newer approaches to arms control, the conventional forces in Europe agreement may be useful in setting a precedent or example for similar multilateral negotiations on limiting conventional military capabilities in other regions. While the negotiations in Geneva on a chemical weapons convention have correctly emphasized the importance of controlling such weapons worldwide, it is urgent to prohibit not just their development, production and stockpiling, but—what is even more urgent—their use.

In addition, there must be new initiatives in the area of arms control to deal with the problems of accidental or inadvertent nuclear war, weapons and delivery system proliferation, and arms transfers. A major problem of global security for the 1990s and into the next century will be the proliferation, via indigenous development or imports, of both nuclear and chemical weapons and sophisticated missile and aircraft capabilities for their delivery. There could, in the coming decades, be a major spread of such weapons, followed inevitably by threats to use them or even the intentional or accidental use of these weapons, particularly in regions of instability. Countries in these regions are increasingly making or obtaining, *via* international trade, advanced conventional weapons, chemical weapons, advanced military aircraft missiles, and even components and technologies essential for developing nuclear-weapon capabilities.

The international trade in arms now includes sales on a purely commercial basis, with no strings attached, such as the major transfer of intermediate-range missiles sold by China to Saudi Arabia and delivered just when the INF Treaty was being ratified. Various economic, political, and security changes in the United States and the Soviet Union have made them less capable of controlling their traditional "client" States, including limiting access of these States to nuclear-weapon-related technologies. Furthermore, there will be enormous pressures on both the United States and the Soviet Union and on other States to sell weapons to the third world, rather than closing down or converting military production lines and destroying existing military stocks. Arms control provides a valuable way to deal with these issues and thereby to avoid their implied threats to the vital interests of the planet.

The eighth globalisation relates to the non-military problems of global security, including economic, environmental, and other problems of global security. Economic threats to global security, stemming from global economic interdependence, include the implications of a widening of the international debt crisis, lack of international liquidity, vulnerability to control over strategic resources, major balance of payments deficits, the possible collapse of certain national economies, the possible failure of major international financial institutions, the possible use of traditional and newer barriers to international trade and international movements of capital, and potential trade wars. Environmental threats to global security, stemming from global environmental interdependence, include global warming as a result of the greenhouse effect, damage to the ozone layer as a result of the release of CFCs, and the potential effects of accidents or sabotage at nuclear power or other nuclear facilities. Other threats to the vital interests of the planet include international terrorism and international drug trafficking. Of particular importance are the relationships among military, economic, environmental, and other threats to global security, with each both influencing and being influenced by the others.

The ninth globalisation relates to the theory of security. It will be necessary to formulate new theories and analytic frameworks for global security to replace traditional theories of security, such as containment, balance of power, deterrence, and hegemonic stability. These new theories will have to take explicit account of global interdependence, the nature of newer threats to security, changes in the distribution of power, and the bilateral and multilateral relations among the great Powers. An important aspect of these new theories may very well be international cooperation as a mechanism for achieving global security, which can be studied using the techniques of game.

SECURITY SYSTEMS FOR THE PREVENTION OF WAR

Security Problems will Remain Forever

When the Cold War between the Western and Eastern European blocs ended, many people predicted that war would be something of the past. However, even with the dramatic changes in relations between the United States and the Soviet Union and more cooperation in the Security Council, will there be no security problems anymore in the future, including armed hostilities among nations?

After every war, there are people who want to build a lasting peace. After the First World War, the League of Nations was

established, and after the Second World War, the United Nations was founded. The reality, however, is that we still have war. The very creation of the United Nations was clear evidence that the League of Nations had failed in its purpose to end war.

The fact is that, besides the people who want the end of war, there are those who see war as an effective instrument to achieve their objectives. They are always ready to exploit every opportunity to strengthen their position, if necessary by the use of violence. The history of this century illustrates this point. As soon as the Second World War was finished, the world was faced with a very dangerous confrontation between the United States and the Soviet Union. Mankind has been spared a third world war, not because people did not want to fight anymore, but because of the possibility of mutual assured destruction by nuclear arms. In the midst of the global cold war that followed the Second World War, some regional or "real" wars did erupt, initiated in the framework of the global strategy of the two competing camps. Although the United States and the Soviet Union were always very careful to keep them from escalating into global nuclear conflict, these limited wars were large enough to cause the death and sorrow of millions of people.

The world will continue to be troubled by many kinds of security problems for a long time to come. The difference will be that in the future the problems will be more related to regions. Thus, the main task will be to prevent wars at the regional level. The fact that wars at the regional level can be disastrous has been proved by the eight-year long Iran-Iraq war and the war in Vietnam.

High-Tech Weapons and Arms Transfers

There has always been a close connection between security problems and weapons. There are nations and leaders of nations who believe in the old Roman adage, "Si vis pacem, para bellum" (If you want peace, prepare for war). The possession of a large amount of armaments is, however, like a double-edged sword. It can provide an adequate defence, but it can also lead to a more ready resort to violence. It can foster an aggressive attitude on the part of a country, especially if its leaders have very ambitious national objectives. We can therefore draw the conclusion that security problems will develop into wars or the use of violence if there are many weapons available. "Si vis pacem, para bellum" is valid only to a certain degree. The preparation for war may lead to war instead of to peace.

The development of technology has a great impact on the effectiveness of weapons and on their production. Weapons technology is today already advanced. The fact that it is developing at a faster pace than ever before will further increase its impact on the effectiveness of weaponry.

However, the improvement of weapons technology has not made weapons cheaper. On the contrary, they have become much more expensive. For example, the price of the rifle, the basic weapon which developed from the muzzle loader of the past into the fully automatic rifle of the present, has increased more than one thousand times. It is therefore obvious that nations with large amounts of weapons systems are sacrificing the improvement of their standard of living. A great deal of resources have to be used if a nation is interested in building up strong and modern military forces.

Advances in technology have made weapons more deadly. With the creation of nuclear weapons, for example, came the possibility of total destruction, even at the global level. That was the main reason why there was no real war between the United States and the Soviet Union, although both were in the possession of large numbers of nuclear and conventional weapons and their confrontation was often very intense. Neither side wanted to take the risk of becoming the object of nuclear attack, and each knew that the other could launch a counter-attack with nuclear weapons if it were attacked first. Nobody wanted to start a war in which both sides could be annihilated.

In addition to nuclear arms, there are chemical and biological weapons—all of which are considered to belong to the category of weapons of mass destruction. But conventional weapons, too, have become much more powerful. The rifle has already been mentioned. The weapons systems of land, naval and air forces are products of advanced technologies. We have aircraft that cannot be detected by radar; we have nuclear submarines that remain submerged while circumnavigating the world; and we have satellites in outer space with which we can observe every part of the globe.

Electronics plays a role of the utmost importance. On the one hand it improves observation, as the use of satellites and radar demonstrates. On the other hand, it can perfect a weapon's guidance system. Technology has been able to deliver precision guided munitions. Such technology permits almost any weapon system to become a point target weapon, and so with the same amount of ammunition, more destruction can be achieved at the desired target. The artillery gun, which was an

area weapon in the past, can now become a point weapon if there is an appropriate guidance system for each round. The existence of such high-tech weapons has made surprise attack much more likely than in the past. An intercontinental ballistic missile could reach its target within only about 30 minutes, with an accuracy of within 30 metres.

Surprise attacks with conventional weapons can also be performed with a high degree of effectiveness. That fact has political implications. It gives ambitious leaders the possibility of achieving their objective by a *fait accompli*. That endangers the security of other nations, especially one's immediate neighbours. It is therefore to be expected that ambitious leaders of nations accumulate the most up-to-date weapons systems to impress and impose their will on other nations, or they can use them to make war, if the other side cannot be impressed.

The situation is advantageous for weapons manufacturers and traders. To achieve economies of scale they need a large market. The more they can sell, the more they can produce; and the more they can produce, the more economic benefit they will gain. They need economic benefit to maintain a high degree of research and development activities. Since technology is now developing so fast, a certain product may become obsolete after five years. New products with greater effectiveness will appear as a result of improved technologies. Without research and development, manufacturers will not be able to compete with other manufacturers. Therefore, every manufacturer is interested in selling the maximum number of products. Since weapons production is a component of the security of the nation possessing that industry, nations with defence industries are interested in exporting as many weapons as possible. Thus, one sees that the biggest weapons exporters are also the advanced industrial nations, namely, the Soviet Union, the United States, France and the United Kingdom. Since weapons and, especially, ammunition can best be sold if they are widely used, it is obvious that weapons manufacturers and perhaps their Governments are interested if there are many security problems. Of course, no one will ever admit that openly.

So it is safe enough to conclude that weapons are playing an important role—if not the most important role—in the existence and perpetuation of security problems in the world. It is therefore understandable that people who are interested in peace are always thinking of disarmament. But because at the same time other people are interested in the manufacturing and selling of weapons, disarmament has remained an empty and hollow word. There are also

enough ambitious persons in developing nations who are capable of manipulating other people's sentiments in order to become leaders of their nations. Ambitious and militant leaders on the one hand, and aggressive weapons manufacturers on the other, are the main actors in generating security problems.

Future Security Structures

Given the fact that security problems will be with us forever, the problem we face is how to prevent the eruption of wars. We cannot take Mutual Assured Destruction (MAD) as a model, because that method has proved too expensive and much too dangerous. We must find other ways and means for preventing wars. As developing nations, we cannot afford to spend too much on defence and armaments, because it would harm our efforts to create greater prosperity. But we should have the means to achieve stability, because it is a *conditio sine qua non* for creating prosperity. We must have security structures at the national, regional and global levels. The security structures at each level should be compatible with one another.

At the national level we must establish national resilience. National resilience is a condition which makes a nation politically, economically and militarily strong enough to withstand threats and challenges to its survival coming from other nations as well as from inside. National resilience is based on an integrated effort on the part of all the people to defend and to maintain the security of their country. Military strength alone, without strong solidarity among all groups in the society, will not suffice. It is much better to have a small military force backed by a united society, than to maintain a large but expensive defence establishment and a society full of social and economic disparities and further weakened by political contradictions. The first situation would make the nation hard to crack from outside, while the second would make it very vulnerable from within. The aim of national resilience is to achieve the right balance between prosperity and security-producing national strength, a balance which will force any offender to think at least twice before risking an attack. If attacked, the nation will fight single-mindedly using guerrilla warfare, if necessary, to defend itself. Such determination will deter other nations from cultivating negative intentions.

The security concept for the individual nation should be enhanced by a regional security structure. Regional security arrangements should be formed with the following purposes:

- First, cooperation among nations within a certain region should create better understanding and allow a more precise evaluation of each nation's intentions and capabilities. That would prevent misperceptions and unnecessary suspicions. If one of the members of the association has ambitious intentions that could harm the security of the region, the problem could be detected and prevented from developing further. Of course, this arrangement requires a willingness to cooperate closely on the part of the military establishments, including intelligence organisations, of each member nation.
- Secondly, close cooperation among the member nations of a regional security arrangement would deter aggressive actions from outside Powers. Even if an outside Power had superior military force and advanced high-tech weapons, the strength of the united regional association would force it to cancel any offensive against the region.
- Thirdly, there would be a possibility for close coordination of armament production and purchases from outside the region. The member nations would retain their sovereignty and be free to decide for themselves, but, with close coordination and a rational approach to achieve the best condition for every member nation, it could be expected that the decisions made by every Government would be compatible with the general interest of the region. Perhaps even production could be rationalized to prevent overlap and to ensure standardisation. That would also benefit the economy of every member nation. The coordination of imports would prevent foreign manufacturers and Governments from playing a dominant role and would, at the same time, prevent excessive buying by a member nation, which could become a destabilising factor in the region.

Of course, this concept of regional security arrangement presupposes the willingness of every nation in the region to establish security cooperation. That would not be possible in regions where member nations are suspicious of each other and are not willing to improve their relationships. Conditions in the Middle East today, where Israel and the Arab nations look upon each other as enemies, and where even among the Arabs themselves there is no unity, would make such an arrangement impossible. The situation in South Asia, too, where people cannot overcome their traditional antagonism, would obstruct mutual understanding, which is the main factor in achieving mutual confidence and close cooperation. South-East Asia with the

Association of South-East Asian Nations (ASEAN) as its core seems to be one of the regions mature enough to enter this type of arrangement.

The Conference on Security and Co-operation in Europe (CSCE), the security arrangement among European nations, is a good starting-point for making Europe a more peaceful part of the world. Since both the United States and the Soviet Union are members of that arrangement, it can guard against threatening behaviour by any European nation. Since Europe and North America play such an important part in the world community, the CSCE experiment can be used as a model by other regions.

Within a regional security arrangement, cooperation in disarmament and in arms control could take place more effectively. The prohibition of biological and chemical weapons could be implemented. The proliferation of nuclear arms could be prevented and the quality and quantity of these arms could be limited. Also the size of military forces and categories of conventional armament could be regulated so that they would provide enough defence and security but would not pose a threat to the environment.

However, to achieve all these arrangements every member nation should have a democratic system. The decision to implement a certain political system is, of course, the sovereign right of each member nation. But the association would also have the right to safeguard the region from the negative consequences of an authoritarian regime in a country within the region. Using peaceful means, like economic pressures and the dissemination of information through the electronic media, the association and its members could influence healthy political developments in the region. The shift towards democracy in Eastern Europe, which was influenced from the outside, is a very good case in point.

At the global level, the United Nations must demonstrate its capacity to play an important role in managing international relations and preventing wars. The main body for decision-making is the Security Council, supported by other bodies in the United Nations organisation.

But the United Nations has first of all to undergo a structural change in the membership of the Security Council. It is no longer realistic to have the permanent members of the Security Council be the five nations that were victorious at the end of the Second World War. Almost half a century has passed since then, and the world has undergone many dramatic changes. Of course, nations like the United

States, the Soviet Union and China have worldwide influence. France and the United Kingdom, however, are today, and will continue to be, just ordinary members of the European Community. On a global scale, they are definitely no more influential than Japan and India. Since each permanent member has veto power and is therefore able to exert its opinion very decisively on a global level, the permanent structure can no longer be considered valid for the world of today and of the future.

The new structure of the Security Council should better represent actual realities in present world politics. In addition to the attention being paid to Japan and Germany, which are growing in importance in the global political arena, attention should also be paid to some nations which wield significant influence at the regional level.

The changes after the end of the cold war have been fortunate for the United Nations, since now the United States and the Soviet Union are generally cooperating and no longer "out-veto" each other in every important decision. We are therefore interested that this situation continue. That means that we look for further developments in the Soviet Union that will guarantee the continuation of the democratic process.

The disarmament process must be enhanced by decisions at the level of the United Nations. More important, though, are the arms control talks and agreements between the United States and the Soviet Union on strategic arms reductions, on the liquidation of their chemical weapons, and on other aspects of disarmament. It can be expected that the role of the United Nations in disarmament matters will be enhanced after the two super-Powers have reached and implemented agreements on their conventional and non-conventional forces.

A stronger United Nations will be able to influence the security situation at the regional level. That is especially important for regions where nations have many difficulties in shaking off old prejudices and are not able to behave in a constructive way with their neighbours. The use of political and economic pressures will probably be helpful in changing these kinds of situations.

Regional cooperation and decisions made at the United Nations level will allow for better regulation of arms manufacturing and transfers than in the past. It should no longer be possible for advanced industrial nations to exploit poor developing nations by selling them expensive high-tech weapons on a large scale. In the future, the

Security. Council should impose economic and other sanctions on any nation that engages in such practices.

The United Nations must have the capability to act and use sanctions, including the use of force, against nations that do not want to comply with its regulations and decisions. It is therefore important that the Security Council be able to formulate decisions backed by all or by the majority of its members, and that it not be paralysed by the veto when facing serious violations of its decisions by any nation.

Until today the use of force by the United Nations has been exercised mainly by the military forces of the United States. That was the case in the Korean War in the 1950s as well as in the recent conflict in the Persian Gulf area. Because an act by the United Nations is a collective act of its Members, no impression should be created that a United Nations sanction is predominantly a United States enterprise. The other Members, including the Soviet Union, must participate equally in the execution of sanctions. That will require changes in the constitution of some important Members like Japan, whose constitution forbids the use of military forces as a means to solve international problems. That was why Japan did not send any of its forces to participate in the Iraq-Kuwait conflict.

The necessity for allied military action to enforce sanctions would also require that the United Nations be able to conduct military operations in an effective manner. The establishment of a skeleton military staff which would be available to the Security Council should be considered. The international staff would also conduct regular map exercises in which general staff officers of Member States would participate in order to familiarize themselves with basic strategic and tactical concepts and thus facilitate any allied military operation that might be undertaken. The military staff could, at the same time, direct the United Nations peace-keeping forces operating in trouble spots like the Middle East.

The combination of national resilience, regional security cooperation and a more distinct role for the United Nations, especially the Security Council, in solving international problems should be the right framework for a future global security structure. To make it a reality, every nation, especially the large States, must be willing to participate.

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Problems and Threats in International Security

This chapter elucidates major problems and threats to international peace and security. Specifically, it will discuss (a) the relationship between national and international security; (b) threats to security in the nuclear age; (c) the risks associated with the increased tempo of competition in conventional arms and other types of military equipment; (d) threats to the security of the developing countries; and (e) the security of small States.

A. The Relationship between National and International Security

National and international security are becoming increasingly interrelated, thereby challenging the notion that security is primarily, a function of national power or military and economic strength. Searching for solutions to the problem of insecurity, many nations increasingly find themselves face-to-face with circumstances beyond their direct control, such as a structural economic crisis and global economic, population, environmental and resource trends. All nations face universal threats posed by the nuclear arms race. Global interdependence has created a situation in which actions not only by major Powers but also by other nations can have major regional or even international repercussions.

Only by recognising that security is not divisible, either in its military, economic, social and political dimensions or as between its national and international aspects, can nations evolve the co-operative measures necessary to achieve security in an interdependent age. This requires a comprehensive and co-operative approach to international security. The unrestrained pursuit of national security interests at the expense of others is not conducive to international security and

may even lead to disaster. With the existence of nuclear weapons such policies constitute a potential threat to the survival of mankind. It is imperative that nations reconcile the contradictions between individual national security interests and the overall interest of international security and peace.

There is a close relationship between expenditure on armaments and economic and social development. Military expenditures are reaching ever higher levels, the highest percentage of which can be attributed to the nuclear-weapon States and most of their allies, with prospects of further expansion and the danger of further increases in the expenditures of other countries. The enormous sums spent annually on the manufacture or improvement of weapons are in sombre and dramatic contrast to the want and poverty in which two-thirds of the world's population live. This colossal waste of resources is even more serious in that it diverts to military purposes not only material but also technical and human resources that are urgently needed for development in all countries, particularly in the developing countries. Thus, the economic and social consequences of the arms race are so detrimental that its continuation is obviously incompatible with the implementation of a new international economic order based on justice, equity and co-operation.

Another illustration of the interrelationship between national and international security is the extent to which global economic trends have increased the economic and social vulnerability of all countries, in particular the developing countries, whereas the disturbances caused by the socio-economic dislocations of the 1970s were generally limited in scope and less harmful in their impact, in the 1980s the imbalance in the international economic, financial and trading framework have affected most countries and have generally not been mitigated by sufficiently offsetting sources of official or private funds. This situation has had an unequal impact, moreover, striking with particular severity the very nations already facing long-term problems of under development. During the last five years, the trend has been towards constantly declining prices for raw materials, the chief items of production and source of income in the developing countries, while the cost of manufactured goods that these countries must import has been rising. The growing trend towards protectionism, particularly in the major industrialized countries, has been particularly damaging as this reduces the export opportunities of the weaker nations. These factors, combined with a sharp rise in the real interest rate charged on foreign loans, contribute to a chronic current account deficit in the balance of

payments of developing countries. The consequent adjustment measures undertaken in these countries to overcome such difficulties have, in turn, resulted in a widespread and sharp reduction in investment spending, both by public and private sources, over the first half of the 1980s. This, plus the less than optimistic outlook for a recovery in spending levels over the next term, will continue to constrain economic growth rates through the rest of the decade. The subsequent impact on real per capita income and living standards will remain negative.

The dilemma facing developing countries is that without a measure of political and economic stability development is difficult to achieve, while without development it is difficult to establish and maintain order.

However, this dilemma is difficult to resolve in the present situation, where the economic and political problems of developing countries arise, not only from the ordinary functioning of economic forces, but also from actions taken by some industrial countries that seek to maintain or strengthen their economic and political standing, or remedy their own domestic difficulties. For example, the pressures exerted upon developing countries by debts that they cannot pay and by the demands of their own development create conditions where national and international security could be seriously threatened.

B. Security in the Nuclear Age

As pointed out in the Final Document of the first special session of the General Assembly devoted to disarmament, "removing the threat of a world war - a nuclear war - is the most acute and urgent task of the present day. Mankind is confronted with a choice: we must halt the arms race and proceed to disarmament or face annihilation". The nuclear arms race constitutes the main threat to international security. The nuclear competition has led to a capability of assured mutual destruction. Given the destructive potential of nuclear weapons, nuclear war is not a rational instrument of national policy. There could be no winner in such a conflict.

Nuclear war could be the result of escalation of an armed conflict involving nuclear-weapon States. Nuclear devastation could also be caused by unforeseen human or technical factors. It may result from mechanical malfunctions, or a coincidence of errors by the warning and control systems. Alternatively, it may also occur as a result of irrational human behaviour.

The continued and further development of military technologies may add new threats by creating the illusion of a potential to survive or even to "win" a nuclear war.

Using national technical means of verification, it is possible to count the number of strategic launchers and even to gauge some of their characteristics. Certain new technologies may pose problems for the national means of verification, which may complicate future talks on arms limitation and disarmament. The problem of verification is epitomized by newer generations of intercontinental ballistic missiles, which, because they can be launched from mobile platforms instead of fixed silos, can more easily escape detection. The deployment of modern cruise missiles and increased numbers of warheads on modern ballistic missiles also has ominous implications in this regard. In the case of cruise missiles, it might be easier to circumvent negotiated restrictions on such performance characteristics as range. Moreover, since cruise missiles are relatively small and can be fired from standard launchers on a variety of platforms, any negotiated restrictions on the number of deployed weapons would be more difficult to verify than comparable limitations on weapons that must be launched from dedicated and clearly recognizable platforms.

The development of multiple warheads and the much greater accuracy of missiles and re-entry vehicles have created the theoretical possibility of destroying at least a portion of an adversary's fixed, land-based missiles in a first-strike. Such capabilities suggest the possibility of greatly eroding an opponent's retaliatory capability through a pre-emptive strike. Acquisition of the ability to conduct a strike that disarmed the other side of its intercontinental ballistic missiles would have serious consequences for international security.

Of particular concern is the situation that has been created in Europe as a result of the deployment of new nuclear missiles. This has led to a marked deterioration of the situation on the continent and an increase in insecurity there.

A special danger is posed by potential advances in anti-ballistic missile defence systems, it is argued that space-based anti-ballistic missile defences could offer some degree of protection against ballistic missile attack. Combined with counter-force capabilities, such defences might provide a temptation, in a crisis, to strike first, with a reduced fear of effective retaliation. It is argued that, if anti-missile defences were coupled with strict limits on offensive capabilities—that is, if both major Powers had very capable defences and only small, yet

invulnerable, offensive forces - a defensive strategy could provide a basis for strategic parity and equal security.

However, the advent of defensive missile systems could, on the contrary, be highly destabilising. It is also argued that an arms race in outer space would inevitably lead to an unabated arms race in all dimensions and would make limitations of and reductions in strategic offensive weapons virtually impossible.

A serious challenge to stability between the major Powers arises from anti-satellite capabilities. Satellite-based systems can provide means for verification of arms limitation agreements, give early warning of attack, monitor events on the battlefield, provide strategic and tactical intelligence to military commanders and facilitate communications between commanders in the field and higher-level authorities. The loss of such capabilities could have adverse effects on the ability of both sides to respond to attacks, creating new uncertainties with the potential to aggravate the dangers of the nuclear age appreciably. One obvious risk is that in preparing for the postential loss of satellites, one or both nations might establish procedures such that - in the event of certain contingencies greater freedom of action would be provided to field commanders, thus reducing the positive controls on military forces that now exist.

The development and deployment of anti-satellite systems has the potential to undermine international security seriously and to promote further escalation of the nuclear arms race. It would be particularly destabilising if either side were to acquire the ability to destroy or otherwise incapacitate the other's satellite early-warning systems and their associated ground stations. Improvements in the accuracy of missiles, advances in command and control and targeting systems the avid pursuit of anti-satellite and defensive systems, the proliferation of weapons, all increase the impression of a potential role for nuclear forces in combat.

The inherent dangers of an arms race in outer space have caused increasing concern in the international community, particularly in the light of the anti-satellite systems being developed and ongoing efforts regarding space-based anti-ballistic missile systems, including laser-beam weapons and particle-beam technology, now pursued. An arms race in outer space could increase the danger of nuclear war. It would also add to the already vast military expenditures and further drain the resources needed for economic and social development. Furthermore, an arms race in outer space would have negative effects on the peaceful uses of outer space.

Under these conditions, the nuclear arms race has taken on new and more ominous implications. Technological advances are creating pressures to attempt to break out from the situation of mutual vulnerability and strategic parity altogether.

The consequences of a nuclear war, in terms of loss of life and human suffering, have been well documented. Recent studies of "nuclear winter" have indicated that, together, a number of nuclear explosions, perhaps no more than dozens of explosions, within a short period of time, might have such catastrophic effects on the earth's climate, the world's food production and distribution system, and the basic physical determinants of life on earth as to threaten the survival of humanity. A major first strike may be an act of national suicide, even if no retaliation occurs.

Important as policy declarations and technical safeguards may be, they cannot adequately guarantee the safety of mankind and no national rivalry or ideological confrontation could justify putting the world at risk. Therefore, it is imperative to achieve dramatic reductions in nuclear armaments as a step towards their total elimination.

C. Chemical and Bacteriological (Biological) Weapons

A milestone in efforts to ban chemical and bacteriological (biological) weapons was the 1925 Geneva Protocol, which prohibits the use in war of asphyxiating, poisonous or other gases and of all analogous liquids, materials or devices, as well as of bacteriological methods of warfare. However, a considerable stockpile of various chemical weapons continues to be maintained by the major Powers and a number of smaller countries. Concern has been aroused about the use of chemical weapons. Research and development on new generations of chemical weapons, including "binary" chemical munitions have, been intensified. The urgency of a complete ban on chemical weapons is therefore greater than ever. The Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxic Weapons and on Their Destruction entered into force in 1975. Since then international efforts have been centred on the elaboration of a convention on the complete and effective prohibition of all chemical weapons and their destruction, under effective verification.

D. The Conventional Arms Race in its Various Aspects

Modern conventional warfare is extremely destructive. There have been quantum advances in the firepower and mobility of modern conventional forces. Widespread resort to sophisticated conventional

weaponry in densely populated areas would certainly result in casualties and destruction of unprecedented proportions. Any conventional conflict between nuclear-armed nations, or between nations allied to opposing nuclear Powers, would contain the seeds of escalation to nuclear confrontation. Many modern weapon systems, such as some artillery and fighter aircraft, have a dual capability. They can be used to fire either conventional or nuclear ordnance. It is possible that the nuclear Powers sometimes co-locate both types of weapons with their forces in the field. As a result, there is a risk of nuclear war by escalation from a conventional war.

War has resulted in an extraordinary toll in lives and human suffering. It has been estimated that there have probably been over 150 armed conflicts since 1945. The average duration of such wars has been three and one-half years. Estimates of casualties from all wars fought since 1945 range between 16 and 25 million killed. In addition to actual deaths and human suffering, the costs of conventional wars must be measured in terms of the destruction of economic infrastructure, lost educational opportunities and damage to prospects for economic growth. Recent wars have produced the largest waves of refugees in modern times, a wave comprised principally of women and children. By the estimates of the United Nations High Commissioner for Refugees, the refugee population world-wide now totals some eight million. Millions more, for whom no accurate count is possible, may be displaced within their own countries.

The conventional arms race is extremely costly, accounting, it is generally believed, for roughly 80 per cent of global military spending as indicated in the United Nations study on conventional disarmament. Some 70 per cent of world military spending is attributable to a small number of States and the largest share to the Soviet Union and the United States. At the same time the growth rate of military spending has steadily increased among some of the developing countries. The rapid extension of the conventional arms competition to regions of the developing countries drains enormous resources and technical capabilities that could be used to advance the quality of life of people throughout the world.

The social and economic costs of military expenditures are hard to calculate. The opportunity costs represented by such expenditures are reflected in the loss of investment capital for civilian projects. Consequently, there is an urgent need for determined efforts to stop the continuous increase of military expenditures and negotiate a concrete agreement or agreements for their gradual reduction, particularly by nuclear-weapon States and other militarily significant

States. In this process, the elaboration of guidelines to govern activities of States in these negotiations would be extremely useful.

New conventional weapons can be used with far greater precision, moved more easily and applied more flexibly, thus bringing virtually the entire, world into the potential keg of modern conventional war. Moreover, when weapons that are deemed to be excessively injurious or to have indiscriminate effects are directed against civilian populations, by accident or by design, the effects can be devastating. In addition, the stocks of weapons deployed in peace-time have multiplied, increasing both the size of inventories maintained by individual nations and the number of nations who maintain large stocks of modern conventional weapons. Should conventional warfare take place in Europe, where the two great alliances could truly concentrate their firepower, the destruction could be unimaginable. And this is even without regard to the real danger that any conventional conflict in Europe or elsewhere might escalate to nuclear war. Moreover, advances in the technology of conventional weapons, the development of new and more lethal types of weapons and increases in the size of weapon inventories, have magnified the destructiveness of war. Worldwide competition in conventional weapons has thus acquired special dangers of its own. Advancing technology has produced some "conventional" weapons that are increasingly capable of massive and indiscriminate destruction.

E. The Security of Developing Countries

Security issues in developing countries have acquired a special degree of urgency. Many developing countries are faced with war and deprivation. Given the growing economic and political links of interdependence between the developed and developing regions, security concerns of the developing countries increasingly influence the entire international system. The security implications of unrest in developing countries are magnified by the possibility of political, economic or military intervention by the great Powers.

For many of the four billion inhabitants in the developing countries, security is conceived at the most basic level of the struggle for individual survival. Eight hundred millions live in absolute poverty and deprivation. Five hundred millions are malnourished. Many millions have no access to safe drinking-water and do not have the income necessary to purchase food. They lack protection against the consequences of environmental degradation and natural calamities, such as floods and drought, which, in Africa in particular, have produced famine and suffering of unprecedented proportions.

The continuation of colonialism and racism in certain parts of the world, particularly in southern Africa, has added to the insecurity of those areas. South Africa's policy of racial oppression and *apartheid* against its majority African population and acts of aggression against neighbouring African States cause international destabilisation in the continent and constitute threats to international peace and security. South Africa's illegal occupation of Namibia is contrary to the principles of self-determination enshrined in the Charter of the United Nations. Moreover, the nuclear capability that South Africa appears to have developed during the recent years has increased the tensions in the African continent and jeopardized international security as a whole. Despite the fact that considerable efforts have been made in the international community, particularly within the framework of the United Nations, on the elimination of colonialism and the racist policy of *apartheid*, no substantive progress has been achieved.

Since 1945, the developing countries have experienced some 150 armed conflicts. Although most of these were the outcome of struggles for independence and self-determination from colonial rule, some involved territorial disputes. Many of them have been marked by various forms of intervention, sometimes at the request of one or both parties, on the part of developed countries, varying from covert assistance or logistic support to full participation. The interference of those states with the largest military arsenals can greatly deepen local conflicts and plunge regions into protracted turmoil. Particularly, in regions that may be regarded as strategically or economically sensitive, such interference can threaten international security.

In addition to threats posed by proliferating arms technology, spiralling nuclear and conventional arms races, problems of development, population and environmental resource issues have emerged as major new challenges to global peace and stability. The recent United Nations population conferences in Mexico City and Bucharest have increased the awareness of the enormous impact that current population trends will have on efforts for development for the foreseeable future.

F. Security of Small States

A significant number of small States have become independent members of the international community relatively recently. It has become apparent that they have specific security problems of their own. Their emergence in large numbers and recent developments in some of them have highlighted the special needs and vulnerabilities of small States. Although the special needs of these States have given

rise to such categories as "small island States", "mini-States" "micro-States", the concept of small States is more relative than precise. The one characteristic which all small States have in common is a very small population. For example, among the members of the United Nations there are 34 States with a population of approximately one million or less. In addition, small States usually suffer from other disadvantages such as a small territory, limited natural resources, geographical isolation and economic and social underdevelopment.

These factors place a severe limitation on the capacity of small States to organize and guarantee their national security on their own. This basic defencelessness is what makes small States especially vulnerable to external attacks and intervention. Their smallness makes them easy targets for aggression by more powerful States or bands of mercenaries and more vulnerable to concerted external propaganda. Other forms of intervention include the use of externally sponsored insurgents, economic pressure and destabilisation. Moreover, small States that are strategically located in relation to the interests of the big Powers or those that possess valuable natural resources face even more formidable problems: they are under great pressure to accommodate the wishes of the more powerful States. In addition, with the advent of the Convention on the Law of the Sea, many small States will experience difficulties in maintaining adequate surveillance over their exclusive economic zone.

It is necessary to emphasize that small States, no less than the other members the international community, are fully entitled to the rights of independence, sovereign equality and territorial integrity. This can be achieved by greater public awareness of the special vulnerabilities of small States and concerted action by the international community as a whole. In this connection, it is clear that the best prospects for ensuring the national security of the small states lie in the collective security system of the United Nations. But that system needs to be strengthened and made fully functional if it is to provide an effective security umbrella for the small States. The fact that small States comprise a significant proportion of membership of the United Nations is in itself a reason for the Organisation to pay attention to their security problems.

In addition, the early adoption of a convention against the recruitment, training and financing of mercenaries, together with an absolute prohibition on the use of the territory of one State to destabilize another, would further enhance the security of small states.

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Pugwash Symposium on Scientific and Technological Aspects of Development of New Weapons, Verification Issues and Global Security

The Pugwash Symposium on Scientific and Technological Aspects of Development of New Weapons, Verification Issues, and Global Security was held in co-operation with the United Nations Department for Disarmament Affairs and the United Nations University at United Nations Headquarters, in New York, on 11 and 12 May 1988. Three panels covered the three topics of the Symposium—weapons development, verification, and global security—and discussion ensued. This article was prepared from an edited transcript of the proceedings. A list of the participants is annexed.

OPENING REMARK

Nartub Kaplan

As the Secretary-General of the Pugwash Conferences on Science and World Affairs, I would like to express our pleasure at holding this Pugwash Symposium at United Nations Headquarters as an input to the General Assembly's third special session on disarmament. During the Symposium, scientists and technologists will present their views on three problems. First, the development of new weapons—What do we see on the horizon coming up for arms control consideration and negotiation? Secondly, the thorny problem of verification—How does one verify compliance with a treaty or agreement on arms control? Lastly, the speakers will discuss the dimensions of global security—moving away from the East-West polarisation we often fall into and trying, instead, to encompass the rest of the globe, particularly North-South issues.

Pugwash has been operating now for a little over thirty years. We were founded in 1957 in response to the Russell/Einstein Manifesto of 1955 calling upon scientists of all political persuasions to sit down together and confer on ways to prevent wars, particularly nuclear wars, and to resolve differences without bias of any kind. We have met every year and have held over 150 meetings, symposia, workshops and conferences dealing with a variety of topics, including arms control, regional tensions and North-South issues. As I have said, we are glad to hold this symposium, which is open to the press, to non-governmental organisations and to the secretariats of missions to the United Nations. Our panel members are at your disposal. Should you have any questions on the subjects covered, please do not hesitate to pose them; we will do our best to give you answers. Following the general remarks by three members of the panel, who will be limited to ten minutes each, we will have individual contributions by the other panellists on their particular subjects to expand upon, or emphasize, certain points. In this way the coverage will be as wide as possible within the limited time available.

Yasushi Akashi

It is indeed a great pleasure for me, on behalf of the United Nations Department for Disarmament Affairs, to extend a very warm welcome to all of you attending the symposium. I am deeply grateful to the Pugwash Conferences, and more particularly Dr. Kaplan, for having agreed to meet here at United Nations Headquarters on the eve of the third special session of the General Assembly devoted to disarmament. The special session has on its agenda an item entitled "Assessment of developments and trends, including qualitative and quantitative aspects, relevant to the disarmament process". I am certain that the discussions here, to be led by distinguished scientists and intellectuals from many parts of the world brought together by the Pugwash group, will be of great assistance to the diplomatic community, the mass media, and non-governmental organisations (NGOs), as well as to the Secretariat, as we all try to clarify our thoughts on possible approaches to the special session.

Since the beginning of the century, disarmament has been an overriding concern of political leaders and the public at large. And yet it has remained elusive, providing some tangible, but limited, results. The galloping pace of recent scientific and technological innovations, combined with the increase in the number of players on the world political scene, has made the task of global disarmament efforts extremely complex and frustrating. While we rejoice over bilateral

achievements such as the conclusion of the INF Treaty (United States/USSR Treaty on the Elimination of Their Intermediate-Range and Shorter-Range Missiles) and the progress made in negotiating a 50 per cent reduction in strategic nuclear arms, the international community is still faced with the daunting task of controlling the arms race, both nuclear and conventional.

Weapons technology has somewhat blurred the distinction between nuclear and other weapons of mass destruction. The technological revolution that has placed scientific knowledge within the reach of an ever-widening circle of people has made the search for acceptable constraints on the spread of deadly new weapons difficult. According to one estimate, one third of the world's total spending on research and development in the scientific field now goes to the military. Therefore, it is most timely that informed and candid discussions should be conducted on the vital issue of the development of new weapons.

Furthermore, innovative means of verification, acknowledged to be the key to future disarmament agreements, should be devised with the help of science and technology. While the search for security is the motivating force of the arms race, it has become clear that it is illusory to try to pursue security in isolation from global concerns. One simply cannot conceive of security only in military terms, while ignoring the large and expanding areas of economic, political, ecological, cultural and other interests which bind peoples and nations together. I do not think that anyone hopes to impede progress in science and technology. Scientific research must, however, serve the purpose of benefiting humanity, rather than of developing more accurate means of causing death and destruction.

I am confident that your discussions at this symposium will stimulate innovative and imaginative thinking on the issues of new weapons, verification, and global security. It will make us less dependent on old patterns of thinking and behaviour and throw light on our future path, which is fraught with risks and dangers, but is also full of promise for all of us. I hope that the discussions in the next two days will contribute to bridging the gaps between intellectuals, scientists, diplomats and communicators and I wish you all success in your deliberations.

In closing, I would like to read a message from the Reverend Nikkyo Niwano, President of the Rissho Kosei-kai and Honorary President of the World Conference of Religions for Peace, whose support has made the holding of this Symposium possible:

"To promote disarmament and global security, it is important to discuss both the technological and spiritual aspects. Ways have to be found to reduce the horrible stockpiles of nuclear weapons."

"You, as eminent scientists from the world over, are taking part in this symposium in order to deal with the questions of technology and its impact. We, as religionists of many different faiths and nationalities, will seek to build trust between peoples and nations."

"To this end, I think the role and mission of you scientists and of us religionists as NGOs are very important and mutually complementary. As we prepare for SSOD III, I fervently pray that this symposium will be most fruitful to us all."

GENERAL REMARKS ON ALL THREE TOPICS

Lameck Goma

Because nuclear weapons threaten the very survival of mankind, they have been the subject of the most concentrated attention in the quest to halt and reverse the arms race and eventually to secure general and complete disarmament. When dealing with conventional weapons, matters do not seem so clear or even so urgent on a global level. Yet all the 150 regional or local wars fought since the end of the Second World War have involved, and still involve, the use of conventional weapons, resulting in the deaths of millions of people.

There also seems to be a fundamental difference between the security concerns of the big Powers and the blocs they represent and the concerns of the third world. To the third world, the overwhelming threat perceptions of the East and West, as related to each other, reflect security concerns about a prospective nuclear war. The threat perceptions of the third world, however, emanate from specific security crises, actually experienced or directly witnessed, as virtually all the regional or local wars referred to have occurred, or are being fought, in the developing countries. Thus, it is the existence and continuing development and sophistication of conventional weapons that pose the immediate menace to the countries of the third world.

Nevertheless, considering the realities of the rivalry between the Soviet Union and the United States and their respective allies, the recent INF Treaty concluded by the two super-Powers is a historical achievement most welcome to us all. But, as Mwalimu Julius Nyerere of Tanzania has said, "the real importance of the INF Treaty... lies in the hopes to which it gives rise. If it does not lead quickly to further and more significant reductions in the stocks of nuclear weapons, and

to actions which prevent new ones from being developed, this Treaty could lead to cynicism and despair rather than an end to the danger of nuclear war".

Thus far, verification issues are delaying the finalisation of the INF Treaty by the American side. The very demand for verification underscores the depths of the mistrust between the two super-Powers. We must, therefore, strive to remove this mistrust.

It is equally essential that reductions in nuclear armaments should not be compensated for by strengthening conventional resources and forces. With the development of science and technology, conventional weapons have become increasingly lethal and destructive. The effects of many types of conventional weapons are said to be very similar to those of low-power nuclear weapons. Moreover, should a major conventional war breakout in certain highly developed regions, who could say that this would not escalate into a nuclear war?

Therefore, the question of conventional arms, of checking or even halting their technological improvement, rising number and geographical dispersion, must also be accorded proper, adequate and most urgent attention. The super-Powers and military blocs which possess the largest and most sophisticated conventional weapons must take the lead, as in the case of nuclear weapons, in the endeavour to reduce the stockpiles of conventional, including chemical weapons and to stop the development of new ones.

Several third world countries and certain regional Powers have succumbed to the compulsion to acquire high-tech weaponry like the big Powers of our time. Thus, for instance, a number of them have equipped themselves with ballistic missiles. Some have acquired the capability of producing such missiles of their own design and have, indeed, produced them; others procure them from elsewhere. But the principal sources of missiles and missile technology are the super-Powers. It is they who must again take the lead in blunting this new and growing arms proliferation. At present, the spread of ballistic missiles is certainly proving uncontrollable.

On the whole, third world countries are increasingly, as Essam Galal has said, "inclined to view themselves as the victims of an escalating arms race led by a handful of industrialized countries". Since only a small number of third world countries possess any significant armament production facilities or capabilities, the weapons are imported principally from the industrialized countries. Weapons production is big business there today. For the military-industrial

complexes of the industrialized countries, weapons have become a commodity just like any other; so military contractors spend millions on sales promotion. Third world countries that feel themselves threatened or are actually engaged in combat with each other become easy markets.

Further, the overwhelming majority of the countries of the world are mere spectators in the field of armament engineering, weapons research and development. The nations of the North are the real and significant actors. These are the nations of remarkable economic, social and cultural achievement.

This brings me to my final point. It is necessary to underscore the wide scope of global security. While the military dimension is crucial, the fundamental security needs of most countries, especially those of the third world, relate more to political, economic, social and cultural factors. This is because most of the threats to regional and national security in the majority of these countries have essentially political origins, engineered by both internal and external forces. Other threats arise from ordinarily uncongenial economic circumstances, yet others from extreme climatic conditions and natural disasters, and still others from the march of religious fundamentalism. In this connection, one hopes that the recent Afghan peace agreement, to quote Gorba chev, "will lend an impulse to the process of settling regional conflicts".

I conclude by saying that while some are expected to do more than others, it is hoped that all will address the grave issues affecting world peace and security with that sense of responsibility dictated by our common humanity.

Serguei Kapitza

There are two ways of looking at verification and arms control agreements. In the first instance, we consider the immediate technical, maybe tactical, and political issues in the negotiation, and conclusions of current treaties; and in the second, we consider the more distant, long-term consequences of these agreements.

Today, with new agreements coming into force, we see a basically new dimension in international relations. It is here we see again, as with the arms race, how modern technology and science have an immediate impact. And if the arms race led to the rather dismal concept of deterrence—a very dubious contributor to our security—we can hope that the development of verification and arms control methods will lead to a much more reasonable and rational mechanism for

ensuring security in the future. Of course, what we are really speaking about is the contribution of new technology to the creation of a transparent and open world.

While the nuclear bomb was being invented, one of the great names in modern science, Niels Bohr, started to analyse its long-term consequences. In those early days, before the atom bomb had been really tested, he came to the conclusion that the only way to prevent the arms race that seemed inevitable was to move towards an open world. He first explained these ideas to Roosevelt with some success. He didn't have much success with Churchill though, who wanted to put him in prison until the end of the war because he considered his ideas too subversive. Later Bohr wrote a very interesting 12-page memorandum on his theory which he presented to the United Nations in 1950. Unfortunately, at that time the Korean war didn't create the right climate for examining it, but today we should go back to the writing of one of the most remarkable thinkers of our time, a man who foresaw the impact of technology on politics. I will return to this subject later.

Now what can we do today? We already have experience in verification, for example in the ABM Treaty and the non-proliferation Treaty. The first, a bilateral treaty, is monitored by the Standing Consultative Commission. The second, a multilateral treaty, is monitored by the International Atomic Energy Agency. What is the experience of these bodies and how can we project their experience into the future?

In thinking about the development of verification technology, we will have to discuss the role of the United Nations, including, perhaps, the Security Council. Should the Council act as a kind of international observation instrument? If you know what is happening, then you are certainly in a much better position to carry out your decisions and your decisions will have greater authority. Perhaps, we can even envisage, as a distant possibility, a global military information centre attached to the Security Council.

Another fascinating theme is verification and deterrence. If we have an extended system of verification, we can go to much lower levels of armaments. But deterrence still seems to be with us. Can we go further and discuss minimal deterrence and the extent to which trust will be generated by the verification process?

There is yet another dimension. Verification technology will contribute to scientific and technical research projects. We already see

the influence that verification machinery has had on seismology and space technology. Observation of the earth from satellites has many uses, apart from direct military ones. This technology will certainly have a great impact on the way we look at our own way of life on our own planet.

New armaments are born in laboratories. To what extent should laboratories be open to observation? You know there are great laboratories, like Cern in Switzerland or Doubna in the Soviet Union, that were concerned with nuclear research. In the beginning, when these establishments were set up, everybody thought that nuclear research was synonymous with nuclear weaponry, but of course they're not synonymous at all. These centres have proven to be important contributors to mutual understanding among scientists co-operating on major projects. Today, the same thing is happening in plasma research; science is again acting as an instrument of confidence and understanding. The advanced technology for accelerators is not very different from the advanced technology for particle-beam weapons. These technologies have the same origin, in a sense, but their targets are different.

There is another problem. To what extent would global monitoring affect local wars and the international arms trade? These are some of the long-term aspects of the impact that verification may have on the common security of our future world. The educational system and the media play a very important role in generating an understanding and appreciation of the verification process. We already see how verification processes often spill over into what can be called "public diplomacy". Verification, morality and information are all wrapped up together. Concepts of national security, common security and stability need to be propagated in many ways and thinking on these matters has to be stimulated through research and through education of both the public and the body politic. What we are really aiming at is a demilitarized, open world, and verification is but one of the first steps towards that long-term goal.

McGeorge Bundy

Making Niels Bohr and his great letter to the United Nations the starting-point in his remarks is one of many propositions in which Dr. Kapitza and I are in agreement. It is right to remind ourselves that at the very beginning, the world leader in nuclear physics tried gallantly, but unsuccessfully, to communicate the meaning of the emerging nuclear danger and hope to Roosevelt and Churchill. He tried again

with other Western leaders. He was unjustly, if briefly, suspected, primarily because Churchill simply did not wish to hear of anything but an Anglo-American partnership on this subject. But what he tried to do is what all of us now have a chance to do. My object in these very brief remarks is simply to focus attention on the issue of openness, which, given our way of complicating work for arms control, translates into verification. There is a very long distance between openness and verification, and it is that distance that I would like to discuss.

Today, of course, the most important single area of progress in verification is that of agreement between the super-Powers on the reduction of nuclear arms. As we meet, the INF Treaty is being delayed in the United States Senate by unresolved questions on procedures for verification. It is likely that even larger questions of this kind will be presented when attention shifts to the negotiation of strategic reductions. I am quite optimistic about the immediate set of problems.

It does seem reasonable, however, to offer the more general comment that the future prospects for international arms limitation will be very greatly affected by the progress — or lack of it — made in this broad field of verification by the United States and the Soviet Union together. I might add that I entirely share the interest that Dr. Kapitza has expressed in enlarging the process of verification from a bilateral to a multilateral, from a national to an international, framework. We should remind ourselves that at the beginning many hoped that the Security Council of the United Nations would be able to assume this kind of responsibility over time.

But, returning to the super-Powers, I would judge that it is in their common interest to recognize that arms control requires of them to give a much higher priority than in the past to the adoption of measures to reliably assure both sides that new agreements are being kept. It is time, at long last, for the two super-Powers to give open and sustained support to Niels Bohr's basic proposition that the age of nuclear weapons requires, for human survival, a move towards an open world. It was in that remarkable letter that he set forth this proposition most fully.

I think we can learn a lot by looking at how we have been going about verification in the wrong way. In the recent history of super-Power disagreement there is such an example. The Soviet-American disagreement about the Soviet radar near the Siberian town of Krasnoyarsk is the consequence of a breakdown in honest communication in which both sides have been at fault. Partly because

of the remarkable and extremely hopeful new openness on the Soviet side, it is now reasonably clear that while the Krasnoyarsk radar is, in formal terms, a violation of the ABM Treaty, the violation is technical, really geographical, and not substantively of great importance. Those American analysts not constrained by government appointment now generally agree that while the Krasnoyarsk radar is not what Soviet apologists have said it was, it is also not a radar capable of managing a defensive battle against incoming missiles. Rather, it is an early warning radar filling a gap in a set of such radars that appear to be designed to make it possible, but not necessary, for the Soviets to launch their own missiles upon reliable warning of a large-scale external surprise attack, presumably American.

The questions presented by this kind of effort to guard against surprise attack are complex and difficult and I am sure they are debated in both countries. The point is that this kind of thing, which exists and is discussed in both military systems, is at stake, and not a break-out from the basic constraints of the ABM Treaty. It is, indeed, a geographical violation, because the Treaty provides that such a radar should be at the borders of each State, but in fact it creates no new threat of ABM defences. The radar was probably placed where it is for reasons of economy; locating an installation in the Siberian permafrost would have been much more expensive. And, as one Russian friend of mine, speaking quite off the record, put it, "from the point of view of those of us who live in Moscow, Krasnoyarsk is at the border". There is a certain lack of enthusiasm for the view that all of eastern Siberia is really a part of the civilized world. So what we have here is a military, economic difficulty that was not taken into account when the language of the ABM Treaty was written, and then a failure to explain the matter straightforwardly.

Now this is a very important kind of problem, because you can write fine print into treaties, but you cannot possibly predict how science, technology and military planning will evolve. You cannot write a permanent treaty on such matters, and we are, I fear, moving in a dangerous direction, all in the interest of verification. I believe that we have to go back and ask ourselves the deeper question of Niels Bohr. We have to ask ourselves what priority we will give to openness. The Krasnoyarsk case is a vivid example of the wrong way to handle such matters. Verification should not be the constrained exception in super-Power behaviour; it should be the governing principle, with exceptions only for those secrets that really are stabilising in character.

It is hard for military men, intelligence men, and the guardians of secrets on both sides to think about, but there really are good and bad secrets. A good example of the kind of secret I would defend is the location of submarines at sea. Another is the security of methods for endurable command and control. On the other hand, there is a need to be open about numbers of weapons, reasons for any divergence from existing agreements, reassurance on the execution of agreed dismantling, clear and reliable procedures for knowing just what warheads exist and what plans for further deployment are projected. My list is illustrative, and in no sense exhaustive; all these things need to be open, well understood and reliably verified on both sides. It is a field in which the practice of *glasnost* will be hard. Bohr used to say that the way of openness will be harder for those who have had least experience in it. But it is right for Americans to recognize that they too have many bad habits of compulsive secrecy. When Niels Bohr appealed to the United Nations for an open world in 1950, he directed his message to an institution that he hoped might listen to him, as the super-Powers had not. But now in 1988, here at the United Nations, it seems right to redirect Niels Bohr's appeal to the two countries that have the most to gain by heeding it at last.

DISCUSSION

Bernard Feld

The issues you have raised, in particular with respect to verification of arms control arrangements, are very important, although I personally am convinced that verification problems are much more political than technical at this stage. Almost all technical aspects of the verification issues have already been solved or can be solved. There is one aspect of the problem, however, which has been touched on only implicitly and which deserves a more prominent place in a discussion of this kind.

This is the danger which arises when either one or both sides attempts to deploy large-scale defensive systems in an atmosphere in which there are no really binding and serious offensive restraints. As in the case of the beginning of ABM deployments a couple of decades ago, the attempt by the so-called strategic defence initiative to start people thinking in terms of a large-scale, global space deployment of a defensive system really seems to me to be particularly destabilising. It will lead to reactions from the other side, or sides, which will enhance the arms race and which will result in a much higher level of

armaments deployed, and a much lower level of security for all concerned.

Martin Kaplan

I would like to revert to one of the points that Professor Bundy made: that the direction in which verification is heading can be extremely damaging in every way for arriving at agreements. We all know that insistence on a particular level of verification depends on the trust existing between countries. The answer to this, I think, has been suggested: openness to the widest extent possible and an increasing exchange of information between the sides. In the chemical weapons treaty, which will be discussed later today, insistence on very fine print for verification is going to be obstructive, and we have to try to strike a balance in what we are insisting on in these areas. Who else would like to make a comment?

John Holdren

I'd like to direct a specific question to Professor Bundy. In your remarks you called for a greater degree of openness. I think many of us would like to see that happen, but my specific question is: Will some further institutionalisation be required in order to achieve openness in areas such as explanations of divergence from existing agreements? We have a Standing Consultative Commission that doesn't seem to have worked all that well in at least some of these instances.

McGeorge Bundy

That's an extremely good question. I think that the general line of advance we want is the reinforcement by both sides of the process of consultation and of directed questions that the Standing Consultative Commission represents. It's not perfect. There is an apparent contradiction between the principles of Niels Bohr and the practices of private diplomacy that allow the reconciliation of differences without embarrassment to Governments. I'm not here to say that I have any general answer. I believe that the practice of candour between Governments is something that both Governments need to learn by doing. A great deal has been learned in the last three years. There is good reason to hope that if the present Government sustains its direction and purposes through time in the Soviet Union and if we get a lively and intelligent and alert Administration out of the forthcoming election, very remarkable progress in serious communication between the super-Powers can be made. One of the things that I think should be a high priority for each Government is honest reassurance of the

other. I don't believe that 50-page contracts designed to last forever will provide that kind of relationship.

Peter Deak

I have a question for Professor Bundy. You said that in our age States cannot formulate an agreement with permanent contents because technology is always developing. What can we do?

McGeorge Bundy

I don't know how to stop technology. I don't know how to stop inquiring minds. I don't know how to stop defence establishments from looking at questions in their own way. It appears to me that you have to put politics first. There is a great difficulty in doing that. There is resistance to the notion that this is, in the end, a set of political questions, but I agree with those who have made that comment already this morning. I do not think there is any plateau of permanent relaxation for nation States in a world of constantly evolving technological possibility. Our only way out, it seems to me, is for the politicians to recognize their common interest in ensuring the sense of security of each side. Beyond that, the only hope is that the problem can become, in some measure, a matter under international political authority. But we all know from 45 years of painful experience what a long job that is.

Serguei Kapitza

We could remind ourselves of what's happening now in the world of computing, where we spend five or ten times more effort on programming and on software than on hardware. I think that is exactly the issue that we face in the world of modern technology, diplomacy and public affairs.

Richard Garwin

Sometimes openness may not be the solution, but Governments, in carrying out their mandates, ought to think about potential openness. For instance, the advent of technology sometimes cannot be prevented, and often is desirable and beneficial. Sometimes, however, it is costly, and even if one succeeds, pernicious or destructive. So in allocating the funds which, in part, make possible the progress of technology, leaders should ask whether their security and interests would be served if the other side, or all sides, had the technology which is the goal of the programme under consideration. If the answer is no, that we would be better off if no one else had the technology, this should raise the

important question of whether we should proceed. For instance, a current topic of technological research is the X-ray laser powered by a nuclear explosion; this is being worked on certainly in the United States, and probably in the Soviet Union. The principal reason given by our Secretary of Energy for conducting this programme is to see what kind of threat another nation could pose to us if it acquired this weapon. How much better it would be to take a leaf from the book of the Nixon Administration, which, when urged by many to have an aggressive programme in the development of biological weapons, unilaterally declined to do that, saying that we would never research, stockpile or use biological weapons. This decision quickly led to agreement and even an international treaty. So even if there is no technological openness, I think it is still useful to ask whether it would be a good thing to develop a technology and, if it wouldn't be, to decide unilaterally not to conduct such activities.

Marvin Goldberger

I would first like to follow up on Professor Bundy's remark about the terrible difficulty of writing voluminous verification provisions. I think we've all had the experience of trying to run things with a minimum specification of the rules, because if you tried to write them down in great detail, someone would run a slalom course right through you. His comment is consistent with his other remarks about the great importance of openness and trust, which would enable one to negotiate treaties that are not 50 pages long, but perhaps only 10.

My second comment has to do with the spread of conventional arms in the third world. There are a lot of culprits associated with that practice. There are indeed the arms suppliers, who find it terribly profitable and who exert pressure to make their sales. But there are also some practices by the consumers of these weapons that I think one has really to wonder at. Why does Spain require — I don't remember whether it's 15 F-86s or 86 F-15s? I can't really understand what use they would have for either of those numbers. Nor do I understand why Uruguay needs submarines. It's not only the pushers who should be scolded in that particular instance — the users must learn to curb their appetites as well.

Martin Kaplan

I live in Switzerland, and I often wonder when I see those F-15s racing across the sky and getting from one border to the other in around five minutes, what they need all those F-15s for.

Gloria Duffy

I just wanted to pick up on a comment that Professor Bundy made in passing, which I think is extremely important. In addition to openness, the super-Powers need to demonstrate more flexibility in resolving disputes and interpreting arms control agreements in the future. In the interest of continuing and vitalising the agreements, they need to change their approach. Instead of clinging to a rather rigid and self-serving interpretation of agreements, they should regard them as an ongoing process in which disputes have to be worked out as they go along. Unless they change the attitude that they have demonstrated over the last six or eight years, the INF agreement is going to be subject to the same kinds of disputes as the ABM Treaty, the Salt I and Salt II agreements, the threshold test ban, and so forth.

McGeorge Bundy

May I just thank Ms. Duffy for that addition. It allows me to put in a sentence I inadvertently left out in talking about Krasnoyarsk. I seemed to be emphasising a Soviet failure, but I think just as much responsibility in the long run falls on a Government which exaggerates or distorts the meaning of a technical violation, as I fear the United States Government did in this case. The United States Government exaggerated the problem instead of following the course that you suggest of trying to resolve it by understanding.

Catherine Kelleher

Given both the frequency and the amount of destruction that conventional weapons have brought since 1945, one can't be terribly impressed by the progress made in limiting them.

As Professor Goma pointed out in his analysis, if one looks at the 150 or so conventional wars that have taken place since 1945, one finds at the root of almost every case a regional conflict, a rivalry between two or more States, that goes back to some of the more traditional sources of conflict: religious, ethnic, and territorial rivalries — very familiar explanations for warfare. The questions are: What solutions can we find? Are there regional solutions, in which co-operative efforts, involving perhaps new institutions or some of the existing regional ones, can damp down problems? Is there a possibility within the United Nations system of a mix of regional and global solutions involving limitations on what are, after all, only the instruments of these conflicts? It seems to me that the first approach is really the one to focus on: How to work out, within regional

frameworks, the ways in which these rivalries can be damped down and conflict, if not halted, at least modified and brought to a swifter, more peaceful solution.

Lameck Goma

One of the well-known causes of conflict in Africa has been the border dispute's. Now, there is a regional "solution", if one might use that word, and that is a decision by the Organisation of African Unity (OAU) to the effect that countries must accept the borders which they inherited at the time of independence. In general that ruling has worked fairly well, and it has been incorporated into the charter of the OAU and many countries observe it. The fact is, however, that many of the borders established in the colonial period were very, very artificial. The borders cut across tribes to such an extent that one can even say that many people who live on the border don't know that there is a border. Some of them have built houses right on the border so that, just by turning in their own beds, they move from one country to another. So Africa has followed the decision that you must stick to the borders you inherited at the time of independence: you may want to take more country, but if you do that, there will be chaos. So that's one regional solution.

Another practice that is followed on a more limited basis in some of the countries in southern Africa is the establishment of permanent commissions involving a series of countries. My own country, Zambia, for example, shares borders with eight other countries. We have established permanent commissions with all eight countries, whereby officials from our country and one of the neighbouring countries are able to discuss issues and conflicts between us. So far this practice seems to have worked, though we have had some difficulties.

Luiz Carlos de Menezes

As Professor Kapitza said, the ABM Treaty is a bilateral treaty, while the non-proliferation Treaty is a multilateral treaty, and both of them have shown limitations. I think their limitations are related. As Professor Goma said, many third world countries are starting to produce high-technology armaments, and my country is an example. At this moment, when some significant progress is being made in the bilateral negotiations between the Soviet Union and the United States, it would be a good time to start reviewing the multilateral politics of non-proliferation, because this progress in achieving bilateral treaties could improve conditions for non-proliferation. Perhaps it is a good time to

start new talks, so that in a few years we can have a treaty that is global, and verification issues can be really international and no longer a bilateral story.

1. DEVELOPMENT OF NEW WEAPONS

Marvin Goldberger

The technological imperative, which states that whatever can be built should be built, has been an important element in the past in the evolution of weapons systems and in setting the pace of the arms race. There are many examples of it: the technical sweetness of Teller's invention that allowed the construction of thermonuclear weapons, and the push to develop MIRVs (Multiple Independently Targetable Re-entry Vehicles). The extent to which this imperative will continue to play such a role depends on how wise we are and how imaginative we can be in deflecting the inevitable march of science and technology away from applications to warfare.

There already exists more than enough in the way of scientific knowledge for simple evolutionary development to yield what may euphemistically be called "improvements" in weaponry, without any new discoveries or technological surprises. Obviously, we cannot predict the future of scientific developments that may have dangerous and mischievous implications. We can, however, try to analyse some of the principal trends to see the minimum threat that could evolve, based on what we now know. I'll run through a kind of laundry list of technological trends related to strategic forces, and make some conjectures about their deployment by the super-Powers in the absence of treaty limitations. There is a whole other topic, conventional force developments, which I shall not address, and I will also not talk about nuclear weapon development. The latter will be treated by Ted Taylor, and perhaps we can return to the very important subject of conventional arms during the discussions.

1. Cruise missiles. Highly accurate, long-range cruise missiles, carrying both conventional and nuclear warheads, will be developed and deployed. Utilising stealth technology to reduce radar cross-sections, these missiles present a grave challenge to defensive systems, both present and future. Because of their small size, dual payload capability and the multitude of platforms from which they can be launched, they are really an arms control nightmare.

2. Hard-target killers. As missile warhead accuracy improves, no fixed target, such as a hardened missile silo, command post or communications centre, can survive attack. Super-hardening simply cannot keep up with the consequences of precision delivery of nuclear weapons. The inexorable improvements in missile accuracy—fixed land-based missiles, land-based ICBMs (International Ballistic Missiles) and sea-launched ballistic missiles—may lead to a crisis which will only continue to grow unless actively constrained by, for example, test limitations.
3. Strategic defence against missiles. Mutually assured destruction will continue to be a physical reality, regardless of any expanded deployment of missile defence. Defensive systems capable of dealing with relatively light attacks against hardened targets can and probably will be developed and tested. It is quite uncertain whether technology will evolve in less than twenty years or so to allow protection of these same targets against a massive attack.
4. Space systems. The utilisation of space platforms for intelligence, surveillance, navigation, communication and so on will increase for both the United States and the Soviet Union. Efforts will be made to increase the survivability of these vital, passive, and generally stabilising assets. The capability of satellites to provide real-time imagery will steadily improve, making detailed targeting information available to aircraft and ground forces, and can be expected to play an increasing role in the conventional warfare threat.
5. Mobile ICBMs. As fixed targets become increasing more vulnerable, the development, testing and deployment of mobile ICBMs will proceed unless limited by treaty. While such forces improve stability, by virtue of their increased survivability, they complicate arms control.
6. Air defence. The Soviet Union has continuously upgraded its air defences over the past thirty years and can be expected to do so in the future. It is highly unlikely that these improvements can keep pace with the penetration capabilities of cruise missiles.
7. Lasers. Low- and moderate-power laser weapons can be expected to play a role in conventional warfare, being utilised to blind sensors and the operators of aircraft tanks and so on. Their utility in air defence or against tactical ballistic missiles will be limited for a variety of reasons, such as weather and

countermeasures. There will be some capability for using high-powered lasers in an anti-satellite role, from ground-based lasers and perhaps space based-platforms.

8. Chemical and bacteriological warfare. The development and stockpiling of chemical and biological weapons will continue unless otherwise constrained, not only in the Untied States and the USSR, but in many other countries. Control of these technologies is particularly difficult in view of their similarity to many peaceful chemical and biological research and manufacturing activities.
9. Submarines. Submarines will become quieter and more difficult to detect, even though acoustic techniques will improve. A variety of operational counter measures will continue to ensure submarines' security. Non-acoustical techniques are also unlikely to provide a serious capability for locating or trailing submarines in a time-urgent or time-sensitive fashion. Communication with submarines can be expected to improve. Submarine-launched cruise missiles, coupled with the enhanced survivability of the submarines themselves, make the protection of surface ships, convoys, aircraft carriers and so on very, very difficult.

This list is by no means complete, but I think it does reflect some of the issues that are on the technical horizon. Will the technological imperative continue to fuel the arms race, or is there a possibility that reason will prevail? A wave of new thinking is exciting people in the Soviet Union, and we in the United States are approaching a new Administration. Could we be on the verge of one of those critical branch points in history where a discreet break with the past is possible? I am enough of an optimist to think that this just might be the case, if we all think clearly and grasp the opportunity.

Theodore Taylor

I would like to focus more directly on possibilities for new types of nuclear warheads, as opposed to Professor Goldberger, who has looked at overall systems. I'll try to put the types of warheads into some kind of a system context. But my focus is on the explosives and on the arrangements immediately around them that can directly affect the damage they can do to various kinds of targets. To avoid being misunderstood, I want to make it clear at the outset that I have had a conviction for a long time that the development of every new type of weapon of mass destruction has made all of us less secure. I am totally

opposed to the further development of radical new concepts for mass destruction.

I want to focus to some extent on the role the nuclear weapon has played in accelerating the arms race and in increasing its intensity and scope, so I will go very quickly through the history of the two generations of nuclear weapons out there. We now have some 60,000 nuclear warheads.

The Manhattan project was conceived when scientists who knew about fission suggested to the Government the possibility of making a bomb. What followed in wartime was a dedicated effort to accomplish one thing: the production of at least one deliverable atomic bomb. Although there were a lot of ideas about rather sophisticated types of nuclear explosives during the Second World War, the objective of the Manhattan project was to make some kind of deliverable bomb, and that was all. From the end of the war to the late 1950s, dramatic progress was made, and thermonuclear weapons were developed. That progress was partly the result of total government and popular support and unlimited access to resources. I think that there were no constraints on what we were doing and no discussion of what was fair or what was desirable.

In those circumstances, quite a number of people displayed what I've come to call an "addiction": an intense satisfaction in working on totally new concepts for weapons of mass destruction. I do not think it is just a figure of speech to say that addiction is incurable; it is a disease, and the only treatment is total abstinence.

In going from high explosives to the atomic bombs that were dropped on Hiroshima and Nagasaki, a factor of about a thousand was introduced in the explosive power of something that could be carried somewhere. In the 1950s, another factor of a thousand was introduced. The development of H-bombs in both the United States and the Soviet Union and, subsequently, in three other nuclear-weapon States led to the packaging of explosives with a force of a million times that of conventional high explosives.

From the late 1950s until the early 1980s, attention focused primarily on how to reduce weights somewhat while maintaining the same yield. Dimensions and weights were pushed down and then incorporated into rapidly proliferating types of nuclear warheads in nuclear weapons systems as a whole.

In "third generation" nuclear weapons — the first two generations being fission weapons and thermonuclear weapons — the accent is on

enhancing certain forms of energy in the explosives and, in some cases, suppressing other forms of energy that for some reason are undesirable. The opportunities for developing third generation weapons are practically unlimited. One reason is that the number of significantly different forms of energy released in a nuclear-explosion is large: gamma rays, X-rays, neutrons, radioactive materials and plasmas. Under certain conditions, an explosive can produce hypervelocity solid or liquid pellets, electromagnetic radiation at longer wavelengths than light, ranging all the way from radar and microwaves to radiation that can have important effects with wavelengths that are many kilometres long. There are possibilities not only for enhancing the design of the warhead and its attachments, but also for developing new types of warheads that at least some people — particularly the "weaponeers" who think of them — may find worthwhile.

Apparently, in the early 1980s, a new arena for the use of nuclear weapons became incorporated into United States policy: nuclear weapons were to be designed for use against objects in space or for use in space. Similar concepts had existed for a long time, but had never won enough support in the Government to be adopted in a major way. In the early 1980s, we had a combination of what was called a big technological breakthrough that made ballistic missile defence (BMD) look practical and a president who seemed to want, perhaps more than anything else, to find a way to avoid having to threaten to kill millions of innocent people as part of our military strategy. When Ronald Reagan was told about BMD, he was very receptive, as were many other people who had been trying to begin such a programme for years. If something like the environment of the United States and Soviet weapons laboratories of the early 1950s develops again without restrictions, I think we can expect to see ultimately the development and, probably, deployment of some extremely dangerous new types of weapons that will make no sense and will underline the insanity of the actual deployment of 50,000 weapons of at least five dozen types.

How can that be stopped? The best way would be for the United States and the Soviet Union to agree not only to ban all tests, but to work with other countries to bring about an international comprehensive test-ban treaty. There are some problems with a comprehensive test-ban: the one that has received the most attention is verification. At least one group of people wants to set a limit of about a kiloton, below which testing would be permitted. If that will get us a ban quickly, then I would support it, but not without arguing strongly for a comprehensive treaty prohibiting all nuclear explosions.

Such a treaty would cause a problem connected with possible new warhead development and a peaceful use of nuclear energy — the use of the fusion of small droplets, pellets of deuterium, to cause small explosions that can be controlled to make power.

There has been interest in that process for a long time in connection with possible weapons development. One piece of evidence is that most of the funding for that programme in the United States has come from the Division of Military Applications of the Department of Energy. What is to be done about inertial confinement fusion is a central issue and will have to be resolved. I would strongly urge that discussions involving all countries that are doing this be held and that those discussions take place in the context of how the problem can be handled in a comprehensive test ban. That should start immediately.

I want to close with a very brief note of optimism about the possibility of using technology for solving some of the problems that will destroy us if nuclear war does not. The transition to intensive constructive action on the scale of the Manhattan and Apollo projects in the United States on some of the pipeline projects in the Soviet Union would present a challenge and provide a very good answer to the question: what is to be done with the "weaponeers" if, in fact, we start banning nuclear weapons?

Richard Garwin

Military capability is more than weapons. If one has only weapons, obviously one does not have a military capability. Capability requires people, numbers, quality, training, morale. I think it was Napoleon who said that morale is to *materiel* as three is to one. So one can improve one's military capability relative to someone else's by attending to these other questions. One can educate one's society to do a better job on strategy and tactics and, in particular, on support systems, which make the weapons more effective. The following are among these support systems: communications—telling people where to go at the right time; navigation—getting them to where they should be; reconnaissance and intelligence—observing and identifying and setting priorities upon the destruction of targets; non-destructive warfare — psychological, economic and electronic warfare; weather observation and prediction; the whole set of sensors for night viewing or something which has become so commonplace in the last forty-five years that one does not think of it anymore as a military weapon: radar; and management and decision processes which support this whole capability. Now, there are some people, but not many, who would like

to prevent progress in any aspect of this military-related complex. But that would prevent our responding to common threats to our society and to improving our lot as human beings.

Let's look, though, at the weapons systems themselves. There are two approaches that might be considered as pure approaches to the evolution of weapons through military technology. One, which has been largely followed by the United States, is to increase the capability at substantial increases in cost. This is desirable from the point of view of the military contractors, yet provides free play for the imagination and the addiction of "weaponeers". It is not necessarily the way to improve military capability, which is not related to the capability of each platform or weapon, but to the capability of the entire force and to its robustness under attack. The other pure strategy is to maintain at much reduced cost the capability that has served to keep the peace and not to lose the wars, and to reduce the magnitude and influence of the military sector. This can also be done through technology, as is the case in the evolution of wrist-watches, calculators, computers or 35-mm cameras. They continuously cost less in real terms and provide some, even greatly, increased capability, because the cost-reduction approach is at least as powerful in the long run as is the striving for increased capability at any cost.

Furthermore, this stress on increasing "capability" often applies to a parameter that has no relevance or is even disadvantageous to real military capability. For instance, supersonic fighter aircraft. I remember the disturbance over the MIG 23 and MIG 25, which have a higher top speed than American or allied fighters. Combat between fighter aircraft takes place either through missiles, where the speed is irrelevant, or through manoeuvring, where speed is a great disadvantage because the pilot is limited in the acceleration that he can accept. What is important is not high speed and the concomitant poor manoeuvring capability at subsonic speeds, but a design that allows for the best manoeuvrability. Nevertheless, these activities, which are irrelevant or pernicious even to one's own security, are funded primarily by appeal to fear or to competition. We have to recognize, as Dr. Taylor indicated, that the avoidance of war is far more in our interest than is the hope of winning a war. And the time has long since passed for the United States or for other major Powers to think that they will get to use a new wonder weapon before somebody else has it.

Now our justification for weapons is the prevention of war. Instead of justifying technological development and the evolution of expenditures on weapons systems by appeals to fear and competition,

we should do our best to look at the economic and the social benefit to ourselves, not only of expenditures on weapons, but of expenditures on other technologies. We have, as President Reagan often says, threats to our common survival. We have the AIDS epidemic and an epidemic of illiteracy in this country. We have crime, we are running out of energy sources, and we have the greenhouse effect and the destruction of the ozone layer. In many of these cases we are very short of knowledge, although we have access to the tools which will enable us to solve these problems. We don't need to wait for an alien race from another planet to threaten us before we get together to co-ordinate our efforts.

In recent months, an independent commission, paid for by \$1.6 million of United States Government funds, has provided the first of a series of reports on discriminate deterrents. The report states that a decade ago neither the United States nor the Soviet Union could destroy a hardened silo a quarter of the world away with nuclear weapons on strategic ballistic missiles. Yet, a decade from now, either side will be able to destroy that silo with strategic weapons with non-nuclear warheads. As a result, this commission, headed by Fred Ikle and Albert Wohlstetter, urges a programme of intensive development, acquisition and training in the use of these weapons. If the Soviet Union co-operates, we could destroy some Soviet silos in this way a decade hence. But only if they co-operate. If they don't want to, they can hide the silo; they can even defend it locally. To keep these non-nuclear warheads ten metres away is as good as rendering them non-existent. It's very different from the costs and feasibility of defending against nuclear warheads.

So the beginning of the solution to our problem is honest public discussion, such as we are carrying out here. Among individual nations, which one wants to waste funds and scarce resources, as well as worsen its own security? Not one. Yet that is the result of many of our independent actions. We have to have an overall evaluation, not just of the feasibility of some programme and its cost, but of the alternatives and the consequences. In non-military activities we should look carefully at the role of inertial confinement fusion or the alternative to breeder reactors or ordinary nuclear reactors, all of which have a place, but only at a cost. And if we can estimate when these techniques might become available, we can do a better job of solving our problems. Secrecy and money and power lead, at best, to the waste of the precious resources of our world, and at worst, to the potential or the reality of instability and war.

The non-military projects that share these characteristics are not an answer and should not be substituted for military follies like time-urgent hard target kill capability and SDI (Strategic Defense Initiative), that promised to provide such perfect protection against the nuclear weapons of the other side that we could be indifferent to them and destroy our own. On the non-military side, there are things that are equally foolish. Breeder reactors will have a place when we run out of low-cost uranium, but they should not be developed now. We should investigate how to build them, but not build them until we get a design which is more economical than the alternatives. And there is the space station with its so-called associated polar orbiter. The space station receives the money, while the polar orbiter does all of the scientific work. We remove the middleman, save 80 per cent of the funds and obtain the answers sooner. The only people who would be the losers would be the NASA bureaucracy. Weapons are dangerous, but the motivation for building them is not so different from the motivation for providing funds for other government activities. We will probably not solve the weapon-specific problem unless we look at these things on a broader scale.

DISCUSSION

Joseph Rotblat

I fully agree with your last statement, that motivation is important, and creating conditions in which war will not be necessary is, of course, something that all of us desire. I also fully share Ted Taylor's optimistic conclusion. The problem is largely the political issues, and you know it takes a very long time before they can be solved. In the mean time, before we have reached that stage, the "weaponeers" may go on and produce weapons which may destroy us. We have this frightening list of possible developments and, in addition, those which we cannot foresee now. Dr. Goldberger said, "Whatever can be built will be built". It seems to me we could also say, "Whatever can be used will be used". If weapons are further developed, we shall eventually run into a situation in which we shall all be destroyed before we have created the conditions we all desire.

Therefore, I come back to the problem of weapons. People say weapons don't make war, people make war. That's quite true. But you cannot make war if you don't have weapons. The political side and the technical side must go hand-in-hand. Given the addictions which Dr. Taylor has talked about and which I think still exist in the military

establishments, it seems to me that as long as these establishments which are dedicated to furthering this type of weaponry exist, then advances will be made. Dr. Goldberger said all this would happen unless we took some steps to prevent it, and of course we are now beginning to take steps regarding testing and reducing weapons. I do not share Professor Feld's opinion that the question of verification is now technologically solved and that it is only a matter of political agreement. As we learned from Dr. Goldberger's list, many problems still require technological discussions.

As long as the military research establishments are provided with enormous funds, there will be people who will work there and go on counteracting whatever we might try to do to reduce the menace. I would like to see definite steps taken to shift their present type of work towards reducing the menace, for example, through verification. This is something which the people working in these establishments can do; they have the expertise and the resources. If more effort were put into developing verification procedures, I think we would get a faster response in reducing nuclear and other menaces.

Serguei Kapitza

I would like to add a few remarks to what has been said, especially by Taylor. I very much support the idea of a comprehensive test ban. It is a crucial thing through which we can demonstrate our attitude towards development of third-generation weapons.

It is also very important to keep in mind what are called "smart weapons"; weapons that use extensively advanced computing technology that can make decisions. In modern weaponry the possibilities for human action are becoming more and more reduced; the time for decision-making and the total number of decisions that can be made are getting smaller and smaller. On the other hand, the advanced capabilities of modern computers are expanding at such a rate that we can really delegate more and more to them. Recently there was a fascinating report about chess computers, which can now play at the level of an international grand master. Though the grand master can still beat the chess computers, they have progressed remarkably. The chess computer is simply another model of a multidimensional decision-making device, and that is what a human being sitting at the controls of a tank or an airplane really is. I am sure that in the very near future these weapons will have a greater decision-making capacity of their own, with very complex consequences.

The remark of Rotblat concerning the necessity of shifting the potential of the military research establishment towards verification is very important. The research establishment does have the technology, but does it have the mentality? Is it responsive to public and private pressure? It often happens that "weaponeers" in their younger years evolve into fighters for the peace in their later years, but it is well known that the most inventive part of their career is the first part. I think we have a problem with generations here.

There is another point that we have to take into account. New weapons have another very unfortunate dimension: they can be used. We see that happening with terrorist groups and others like them. I'm thinking not only about nuclear weapons — a special preoccupation of Ted Taylor — but also poisons and similar things. We now have strange drugs that have been produced by rather simple means in backyard laboratories. The distance from that to terrorism by poisoning is very short. How do we face these issues? They are not exactly on our agenda, but somehow they crop up when you start thinking about how to control the way in which the results of scientific and technological progress are used in society.

Vittorio Canuto

I represent the Holy See Mission to the United Nations. With the expertise of three scientists, Messrs. Goldberger, Taylor, and Garwin, available, it is hard to resist the temptation to ask many questions. I would like to ask Dr. Taylor two questions; one concerns the test-ban treaty to which he referred. It is alleged that we have to keep testing in order to make sure that the reliability of our stockpile doesn't go down. I have read several statements for and against this argument, and I would like to have Dr. Taylor's opinion on it.

My second question to you concerns something that has not been mentioned, but which is equally important, namely, the fact that the accuracy of an ICBM does not lie in the theoretical numbers, but rather in the more experimental numbers, the ones arrived at after carrying out several test flights. Would you comment on the possibility, feasibility or desirability of a United States/Soviet ban on test flights of ICBMs so that their accuracy will be a parameter that we will not be able to improve upon, and thus the impact of an accurate ICBM will be reduced?

Theodore Taylor

Yes, the argument for continued testing is that warheads deteriorate and eventually won't work. Very persuasive technical and

historical arguments for saying that that's not valid have been made in the course of the last year or so. Some of this work has been assembled by one of the senior staff members of the Lawrence Livermore National Laboratory, Ray Kidder. Ray's a member of the laboratory in good standing, who was asked by Congress to prepare a report on just this issue. That report has been published. It is not classified, but there is a classified version of it. Now, his findings come primarily from examining the history of testing. He finds no justification at all for testing in the light of the history of weapons development throughout the 1980s. Separately, other people, including Carson Mark, who is still at Los Alamos in a semi-retired way, Hans Bethe, and others have said the way you check the reliability of weapons in stockpiles is by periodically sampling them and opening them up to see what's inside. You don't just take a missile and go out and test it, because if it doesn't work, you don't know why it doesn't work, and if it does work, you are not sure whether or not the next one is about to fail. I think that the argument about monitoring reliability has been a smoke-screen to cover the real reason for testing, which is to develop new weapons.

Regarding the matter of accuracy, I'm certainly no expert on what is in the offing. Let me just say that one element of accuracy that has always offered a potential new opportunity is fire control from space. We started worrying many years ago about being able to see exactly where something is going from space and then being able to guide it in with terminal guidance right to the point. In a context of nuclear exchanges, one of many reasons why that doesn't make sense is that such a sensing system would be extremely vulnerable to nuclear explosions, among others. I think Dick Garwin is much closer to these things and he may have an answer to your question.

Richard Garwin

An ICBM test ban or a quota on ICBM tests would largely reduce confidence in the reliability of the ICBMs. It would also, I suppose, if development were permitted, drive people towards terminal homing or navigating warheads, because one could not build up an adequate data base from experience. Certainly a ban or a quota would slow the evolution of these weapons.

Marvin Goldberger

The accuracy issue is complicated by the fact that we have a peaceful space exploration programme. If the people at the jet propulsion

laboratory develop a guidance system to put a spacecraft located several billion miles away within a half a mile of where they aim it, that same development obviously has implications for the accuracy of some significant portion of the ICBM's trajectory. On the other hand, military people are terribly conservative. They would not take the word of someone who had developed something for one thing and put it into their missiles. They would insist on testing it. In that sense, a limitation on the availability of testing to improve accuracy would have some impact on a particular evolution.

Question

I have a question for Professor Taylor, and that is whether compliance with a 1-kiloton threshold limitation on nuclear explosive tests would reliably prevent the kind of new weapons development that he suggested is in the offing.

Theodore Taylor

I'm sure it would prevent the development of some new weapons, some of the more troublesome ones. But not all. I would say, however, that the development of new weapons that don't require enormous amounts of energy, such as hypervelocity pellets and microwaves, to the stage where they become threatening and are deployed, requires many tests over a long period of time. I suspect that all of the concepts that I am aware of will not weather examination over a decade of development and never get deployed because they are just not sensible. But things could be done that would be interesting, would excite "weaponeers" and certainly be a way of maintaining vigorous activity in the weapons laboratories. It's for that reason that I endorse proceeding with a 1-kiloton threshold agreement if that's the only thing politically possible at this time. I would strongly urge that we go as fast as possible towards closing the gap and going all the way to zero.

William Epstein

The Soviet Union had said that they would like to see tests cut down to maybe three or four a year and to a maximum limit of one kiloton. Certainly that would be a serious step in the right direction. But they have now agreed, in their joint statement with the United States on 17 September 1987, to a much slower step-by-step approach, which, their officials say, might lead to a comprehensive test ban some time in the twenty-first century, if we're lucky. Now my question is: How do we educate and inform governmental leaders and the public of

this simple and most verifiable of measures, a comprehensive test-ban treaty?

Theodore Taylor

I don't know. I think the problem has to be broken into pieces. One problem with the test-ban treaty—which, in many people's minds, has been the only reason we don't have one—is verification. It's often said that in the 1960s we were within two or three inspections per year of reaching agreement on a comprehensive treaty and we missed that opportunity. I'm not sure we were that close, but verification has been a big issue and that's the only reason that many people in the United States Congress and elsewhere support a low-threshold treaty. I have to say that if what we are waiting for in going from one kiloton or ten kilotons to zero is absolute verification of no cheating on a comprehensive treaty, then we are waiting for something that is never going to happen.

There is a crucial bit of education, I would call it, that the world needs to go through; it has to learn that there is no regulation of any kind that can be absolutely guaranteed to reveal non-compliance. We do the best we can on all kinds of fronts on which human behaviour threatens society. We don't insist on being able to catch all thieves before having laws that make what thieves do illegal. We have to somehow compare risks and not say we won't have a comprehensive test-ban treaty until seismic remote detection can detect down to zero yield, because that will never happen.

Marvin Goldberger

Concern over the question of verifying every possible test has built into it the total fallacy that if, within a very strict verification regime, somebody does manage to pull off one or two clandestine tests, it's going to make a difference. At the time that the limited test-ban treaty was being violently opposed by some in this country, the spectre of the Soviet Union's testing behind planets or in highly active seismic regions was raised. Anybody who knows anything about weapons development understands that that's just nuts! What possible kind of advantage could be achieved? It seems to me that that is another part of the argument that we ought to make in trying to sway the minds of decision-makers in this country.

Richard Garwin

Every previous Administration maintained—however sincerely, we may question—that they wanted a total ban on nuclear tests and that

only verification stood in the way. This was also the position of our partners in the negotiations, the British and the Soviets, however sincere they were. But as the goal came into sight, with the evolution of seismic verification means and the increased willingness of the Soviet Union to allow all kinds of on-site inspection, the desire for a comprehensive test-ban treaty cooled. The Reagan Administration very frankly said, beginning about four years ago as I recall, that even if any test, of any magnitude, were perfectly verifiable, they could not accept a ban on nuclear testing. They needed nuclear tests for ensuring the reliability of the existing stockpile, for developing new nuclear weapons, which would be safer and more secure, for ensuring that the nuclear weapons could be delivered against increasingly effective non-nuclear or nuclear defences and for being able to react to threats that the other side might prepare. So certainly one will not change the official view of the Administration. Members of Congress and other people, however, have focused on verification as the obstacle. Who knows what their response would be if verification were clearly feasible by a combination of unilateral national technical means and co-operative techniques?

Jaskaran Teja

I am the Ambassador of India to the Conference on Disarmament in Geneva. I was very much impressed by some of the issues which have been raised, because we on the negotiating side have been discussing precisely these questions. We know that the technological imperative which Dr. Goldberger mentioned is one of the engines of the arms race and, of course, it can also be used for purposes of verification. We have an item to this effect on SSOD II's agenda, which we shall be discussing next month. The pace of technological development—the increasingly fuzzy boundaries between nuclear and conventional weapons, the new technologies of interchangeable components, and the use of various strategic missiles without nuclear warheads—does create lots of problems for arms control and disarmament, particularly at the multilateral level. Is it possible from the scientific and technological point of view to define the new kinds of weapons, which are neither nuclear, strictly speaking, nor conventional in the conventional sense? "Smart" weapons have been mentioned. Nuclear-propelled lasers in the ballistic missile defence technologies are being talked of. Can the scientific and technological community provide certain broad guidelines which will be helpful in the multilateral negotiations? Of course, we all assume that whatever we

negotiate will be globally applicable, and that once it has been negotiated, it will be binding.

Marvin Goldberger

Let me comment on one aspect of the multilateral issue. Were the United States and the Soviet Union ever to significantly decrease the number of strategic weapons that they have to, say, five per cent of their current strategic forces, we would be in a situation in which other countries would have to be brought into the act in order to ensure a secure world. That's only one small part of the question that was posed, and I defer to my colleagues on the rest.

Richard Garwin

Well, I think the question was primarily whether one could define these weapons. It's hard to discuss unless one defines, but I think it was previously indicated by Professor Goldberger from the floor that when one tries to set strict rules and definitions, it's too easy to find something which does not fall under those definitions. So I think, somewhat heretically, that we had better try to control those things before we define them.

Theodore Taylor

I don't have a definition to offer, but I think your point is extremely important, and I would like to see much more being done to answer the question: What kinds of new weapons are most troublesome? We have to go beyond nuclear weapons and go into more detail than people do now. For example, in most discussions, biological weapons are lumped together, yet some are more terrifying than others, and the question is: What aspect of these new possibilities troubles us more than the "conventional weapons" that are already out there? Is it just because they are new, or is it because they accomplish something that we couldn't accomplish before that we find very dangerous? I think that needs a lot of attention.

Richard Garwin

On this same point, in 1983 I testified before a committee of the United States Congress and introduced a draft treaty to ban space weapons, without defining them; they were weapons to damage or destroy objects moving in space, or from space to Earth or from space to the atmosphere. I think that's about the level of specificity that one should use in looking at these threats.

Du Xiang-Wang

I would like to ask Dr. Taylor or Dr. Goldberger a question. Just now you mentioned that there are many possible new kinds of weapons. Could you predict the feasibility of developing any anti-particle weapons or anti-matter weapons?

Theodore Taylor

Some very low-level work has started again on the big problem of storing anti-matter in such a way that it's not infinitely dangerous. It is much easier to make, though still very difficult. Storing it has been a fundamental problem. Having thought about this for quite a while and having talked about it with other people, I don't see any sign yet of a fundamental concept that would give us reason to worry about anti-matter weapons.

Marvin Goldberger

There have been attempts to analyse the possible utilisation of antimatter for weapons, and I think most of the analyses show that the rate of accumulation of anti-matter is awfully slow. This does not mean, however, that the concept is not taken seriously, at least in the United States. There is money being spent by the United States Air Force on this project and just yesterday I was invited to be on a committee to evaluate the Air Force's efforts in this direction.

Serguei Kapitza

Goldberger has said much of what I would have said, but there is yet one other point to make. All the processes that now exist for creating anti-matter demand an enormous amount of energy and their efficiency is very low, so even if you do manage to store it, you produce it at tremendous expense. In this sense, you get nuclear explosives for practically nothing.

Richard Garwin

I think the anti-matter weapon is a good example of one whose development is driven by fear and competition. I notice that the Cern nuclear accelerator in Geneva has been attacked by some because it makes anti-protons and has a marvellous means of cooling them so that they can be collected. Various people want to take a few of those anti-protons away and use them for physical measurements or, as Dr. Goldberger says, in work which is encouraged by the Rand Corporation and the United States Air Force to explore the feasibility of anti-matter weapons.

But Dr. Kapitza's point is a very good one. Each of these anti-protons would release 2,000 million electron volts. When it annihilates, that's not so different from the 20 million electron volts that one gets from a three-times as heavy tritium nucleus. Certainly, unless one had some kind of chain reaction initiated by the anti-matter, it would be an awfully costly way of providing some energy release. In all of the examples that I have seen proposed in the popular literature, including the popular defence literature, the ultimate use of anti-matter is to create a thermonuclear or a nuclear explosion, and nuclear Powers would find it far easier to do that by the means that they have known for the last thirty years or more. Non-nuclear Powers would find it much easier to make nuclear weapons than to make anti-matter weapons. So, I think that the United States should really not put experimental money into this and contaminate a branch of physics that has thus far remained free of the militaristic tinge. We should put our money where it will do more good for our national and international security.

Martin Kaplan

I'd like to shift the focus of attention to another class of potential new weapons, biological weapons. Science fiction scenarios have been advanced on the use of genetic engineering to fabricate new types of horrible biological weapons, and this has led to arguments for increasing United States research on those weapons. These science fiction scenarios feature organisms that I can only put in the class of the Andromeda strain, which is supposed to have invaded the Earth or be able to invade it and kill every living thing on it. Anyone who has any knowledge of biology, genetics, epidemiology and evolution, especially evolutionary principles, will understand immediately that this is simply out of the realm of possibility. A genetically engineered organism is weak and cannot survive in an atmosphere in competition with other microbes of normal flora.

The point I want to make is that we have enough knowledge of the organisms that any laboratory deals with every day—the viruses, the virus classes and the other bacterial organisms—to produce just as harmful or much more harmful organisms than those one can conceive of engineering genetically, because these normal organisms have survived, can produce disease, and have shown their effectiveness. Influenza is one, but there is a whole host of them. I merely say this to try to lay to rest these scare scenarios that have arisen about genetic engineering *per se*. I don't like to have this new technology, which is

very popular now and extremely important, confused in the biological weapons debate with what we already have, because in the process I think that we may hold back many areas of research in genetic engineering that could be very beneficial for human health, if allowed to develop in the normal way.

Richard Garwin

A lot of genetic engineering is carried out in commercial secrecy. How does one know that these people are hot working on readjustments of old organisms for biological weaponry, if not brand new kinds of organisms?

Martin Kaplan

Industrially engineered organisms are not in the class of pathogenic genes or any pathogenic organisms. Industries work in commercially profitable areas, such as insulin. It would be very difficult for a commercial concern or even a government concern to work with pathogenic organisms without it becoming pretty evident, fairly soon. I think I will expound more on this when we discuss verification.

Betty Lall

It seems that if we go for a 1-kiloton threshold ban rather than a complete ban, we will stimulate a tremendous amount of controversy about whether a particular test is above or below the threshold — we have already seen that with a 150-kiloton threshold. This will add, I think, to the problem of trying to strengthen the non-proliferation Treaty regime, which has also begun to be threatened.

I was interested in Dick Garwin's comment about his drafting a treaty on space weapons. One thing we have learned in the arms control field is that it is much more effective to ban weapons before they have been placed in a particular environment. Is there not some sense of urgency to achieve an effective ban on testing and developing all weapons in space, because the present treaties only ban the testing of nuclear weapons and other weapons of mass destruction? Perhaps you would like to speak on some aspects of verification that may enter into our attempts to obtain a complete ban on weapons in space.

Theodore Taylor

Two problems arise in connection with a ban on space weapons. The first is defining a weapon. Many of us have spent a great deal of time trying to define a nuclear weapon to mean what most people

seem to think of: a nuclear explosive weapon. It's very difficult to pin it down in such a way that everybody is satisfied. The second question is establishing a verification regime based on measures short of physical inspection. Some people call such forms of verification "non-physical" inspection. There has not been a great deal of work on that because we are used to technological answers to problems. In preventing weapons from being put into space, however, we are going to have to depend primarily on a combination of technical alertness and "whistle-blowers", people who tell the rest of the world of violations as they become aware of them. There is no way that weapons could be put into space without many, many people knowing it. Because of the nature of work in space, it would be much more difficult than hiding away a few nuclear warheads. Some of us have spent quite a bit of time trying to think through ways of verifying that there are no nuclear warheads on launch vehicles. When you start looking at things like the Soviet Proton, a big launch vehicle, and the United States space shuttle, and ask how you look inside without tearing everything apart or watching every small package go through, you run into some difficulties. We must do the best we can, but we will not have a technical umbrella solution for verifying a ban on all space weapons.

Serguei Kapitza

I would just like to remind you that there have been quite detailed suggestions for inspections on launch, and I think that it can be conclusively proven that no weapons are carried into space.

Richard Garwin

I would like to say something which is not technical but may still be significant. In the United States, treaties are automatically the law of the land and bind individuals as well as the Government. It is customary, for instance, for the Government to have those who work in the field of anti-ballistic missiles sign each year a statement that their work is in compliance with the ABM Treaty. I believe that the Soviet Union has had a law on treaties since 1978, and that thus a treaty ratified by the Supreme Soviet is binding on Soviet citizens. So one has an interest in ensuring that treaty obligations are publicized widely and that individuals are informed of their responsibility under the treaties.

Gloria Duffy

A question for Dr. Taylor. I was interested in your idea of an international comprehensive test ban. I wonder what the experience

of the non-proliferation Treaty would teach us about that. The problem has been, of course, the non-accession of the countries that are the most likely to acquire nuclear weapons. As IAEA inspectors are fond of saying, they spend 85 per cent of their time and resources verifying compliance by the countries that are 15 per cent of the problem. What would induce those countries that might have an interest in testing to accede to such a treaty?

Theodore Taylor

I see some necessary, but not necessarily sufficient, conditions for accession by countries that are now believed to have nuclear weapons but are not among the announced five nuclear-weapon States. To keep proliferation from continuing, it will be necessary for the five countries that have nuclear weapons to say publicly that they are either going to get rid of them or set up standards of how many nuclear weapons they will allow in other countries. Now I don't think that's possible. One can't forbid a country that feels threatened to do something which the super-Powers are continuing to do and show no sign of giving up. That's a very hard pill to swallow, but I don't know how to deal with proliferation short of making it clear by our behaviour that nuclear weapons make all of us, including those of us who have them, much less secure.

Richard Garwin

There is the question of positive security guarantees and negative incentives that has been discussed. The problem is to make those guarantees credible, and I think more effort ought to go into that.

Question

First, Niels Bohr's concept of openness extended to industry. It's a big demand, but one may not be able to get away from it. Secondly, one talks about confidence-building largely in the context of the super-Powers and the European nations. Does one have to wait for the process of confidence-building between the super-Powers to progress further before others are brought into the picture? In particular, is there not a place for other nations in the process of verification? In fact, couldn't the involvement of other nations even improve confidence-building between the super-Powers?

Richard Garwin

In connection with verification and other countries, I believe the States of the Five Continent Peace Initiative volunteered their good

offices to play a role in verifying a comprehensive test-ban treaty. On the question of extending openness to commercial organisations, there is a problem. Companies are reluctant to spend their money unless there is some possibility of having exclusive rights to the benefits of their technological research for some time. A company makes a new drug, patents it, and has the exclusive right to it for 17 years—a period many companies already think is too short. We know of many diseases for which drugs could be developed or for which they even exist, but there is no manufacturer who will provide them, because the people with the disease do not have money to pay. We may remove one of the engines of progress if we insist that every thought and every development be totally open. Would you respond?

Question

I am fully aware of this, but can we have real confidence-building without openness on the industrial front?

Richard Garwin

I believe that the United States, supposedly a bastion of free enterprise, has a positive obligation to show how industrial secrecy is compatible with these international undertakings. In many companies, in addition to having to comply with specific treaty responsibilities, one occasionally has to sign a document attesting to the fact that one is abiding by the rules of business ethics that the company has promulgated. So I think there is work for the United States to do, as well as other nations that are in the free-enterprise system or aspire to it.

Karlheinz Lohs

I have only a brief answer to Martin Kaplan's question. It seems to me that new chemical weapons are under development, and the technology of the binary systems opens the door to very new combinations of highly toxic chemicals. But up to now, there is no concrete information from the military side. Martin raised the question of toxin weapons, where I am afraid there are also new developments. You remember the book *Biological and Toxin Weapons Today*, written by Professor Geissler for SIPRI. SIPRI is now preparing a new study on future toxin weapons.

Julian Perry Robinson

Dr. Goldberger listed the wider proliferation of chemical and biological weapons as being one of the things we could perhaps

anticipate in the future. I wonder if, in introducing his shopping list in the context of the technological imperative, he wasn't perhaps inflating the importance of that concept a little too much. It's a very important concept indeed, but I think one can, in some cases, take it too far, and the case of chemical and biological weapons may be illustrative of this.

If one says that chemical and biological weapons are going to proliferate around the world by virtue of the technological imperative, what one is saying is that they haven't proliferated so much in the past because of technological inadequacies. Yet, it seems to me that when talking about chemical and biological warfare, one must bear in mind a whole range of other factors, which are very often overlooked, particularly in meetings on disarmament where politicians come into contact with scientific concepts. These weapons are basically rather bad weapons; their military utility is circumscribed by a whole range of factors. Protection can be devised against them, that is to say, armed forces can continue to conduct operations, even in a state of being protected against chemical weapons, whereas, in the case of other types of weapons, that would perhaps not be possible. That protection hinges very largely on physical chemical principles, that is to say, principles in which the chemical identity of the threat is less relevant. What I want to convey here is that the factor of protection must be kept very firmly in mind when alarmist statements about the future of chemical and biological warfare are propagated.

Martin Goldberger

I'm glad I was attacked on the issue of the technological imperative, because I was about to attack myself on it. It can be overdone and what I am going to say also has some bearing on what Dr. Rotblat said earlier about the weapons laboratories. It is true that they do an awful lot of mischief. The whole idea of SDI was largely built upon, as Ted pointed out, an exaggeration of a claim—made by someone who shall be nameless—about the efficacy of a particular nuclear weapon's development. Research on weapons can be attacked on the grounds that it enables politicians to do things that they couldn't otherwise do or follow courses of action, however ill-advised, that might not have occurred to them if they didn't have the weapons research establishment whispering in their ear. But in the final analysis, it is unfair to put the monkey entirely on the back of the scientific community or even our military forces. Our military forces and the military research establishment serve at the will of all of you. The people have decided we should have a defence establishment. To suggest that scientists

are so holy or perhaps so unpatriotic that they wouldn't participate in this perceived or stated national need is just a trifle unfair. We do have a lot of responsibility, and part of our responsibility is of course to explain as clearly as we possibly can the issues associated with weapons so that politicians can make sane decisions. But ultimately it's the responsibility of all of us.

Mambillikalathil Menon

All of us accept the fact that technological change will take place even more rapidly than in the past and that there is a certain inevitability about it. The question is: How will it be used in different areas? Now, for example, if one takes completely new areas, like high-temperature super-conductors, it's more than likely that their first major applications will be in defence systems. Many of these discoveries do not arise from defence research; they take place for other reasons. These technologies, however, are then developed and lead to weapons systems because of the existence of defence establishments—a point that Gold-Merger was just making in answer to Rotblat's point. Today there are very large establishments everywhere working on defence systems and using scientific discoveries which are made all over the place. So we have an existing structure, and in some sense we have to learn to redirect it and, in time, dismantle it. The ultimate purpose of disarmament is to eliminate arms, yet, in situations like the INF, what you try to do is remove a small part of the system. If modernisation occurs in other areas, however, then you are not really talking about changing the global situation for the better.

Question

This morning the proliferation of ballistic missiles was mentioned. Isn't it high time to conclude a non-proliferation treaty concerning ballistic missiles?

Richard Garwin

In fact this is a question which is becoming more important as the super-Powers give up certain weapons. Even if the United States and the Soviet Union continue in the direction set by the INF and eliminate worldwide all their intermediate-range ballistic missiles, there is no ban on any other country having the missiles, unless they are transferred to it from the United States or the Soviet Union. It will not be long, therefore, before the people who formerly had most of these missiles will become very uncomfortable if other nations have them,

particularly if they sell them in international trade. So, I think that the United States and the Soviet Union may take the lead in suppressing that trade or in formulating a multilateral ban.

Vittorio Canute

Could you inform us of the progress being made on the X-ray laser and give us your opinion about its effectiveness?

Richard Garwin

What has been stated and what I believe to be true is that the principle of nuclear explosion-induced X-ray lasing has been demonstrated in underground tests. However, it is a very long way from there to a weapon, even to an ineffective one. The number of development tests required to determine if an effective weapon is possible has been variously stated as between 20 and 200. The press in the last year has reported a strong disagreement between Roy Woodruff of the Livermore Laboratory, who was formerly in charge of the X-ray laser programme there, and two people less closely associated with it, Edward Teller and Lowell Wood. Now, information which came to light reliably indicates that Woodruff resigned his responsible position, charging that Teller and Woodruff had made irresponsible and exaggerated statements about the status of the technology and the time of availability of an effective weapon.

My own view is that Woodruff has the better part of this argument. In addition, there are many counters to the X-ray laser. It is largely self-counteracted because it destroys itself in the production of one pulse, which is intended to be directed towards individual targets in various locations, to destroy them. The way in which it is used—keeping it on the ground and popping it up—requires that it get through the atmosphere and to a position from which it can "see" a target above the atmosphere while the target is still visible. If the target is not visible, the X-ray laser is useless. Now the submarine-launched ballistic missile has a shorter flight time.

It also has a shorter burn time, and it is far easier to provide it with the lesser speed that will allow it to fall to its target entirely within the atmosphere, shielded from the X-ray laser in boost phase and even in mid-course, but certainly in boost phase. So the Secretary of Energy no longer suggests that the X-ray laser will serve as a back-up weapon in case the non-nuclear weapons of SDI do not work. He merely says that we are working on it to see what the Soviet Union might pose as a threat to SDI.

2. VERIFICATION ISSUES

Catherine Kelleher

As the first speaker this afternoon, I have the opportunity to wade into the discussion at a very simple, definitional level. All of us will be concerned with the definition of a verification system and what, precisely, it must assure the parties to a particular agreement of. The set of requirements that I will put forward do not deal with the very interesting question raised this morning about the degree to which not only signatories to a treaty use a verification system to determine the credibility and the advisability of any particular agreement, but other States and interested parties as well.

It strikes me that there are four discrete elements that one should worry about when looking at any particular system, no matter what weapons or what functional area it pertains to.

First, the verification system set down in an agreement or agreed to informally should recognize a militarily significant deviation from what has been agreed to. This requires not only an understanding of the phenomenon involved, but also the development of some kind of measuring stick or metric, some way of telling what is significant and what is not. All of us on the panel this afternoon begin with the assumption that no verification system will provide a 100 per cent guarantee that all prohibited activities are not being carried out. The three other requirements for the system flow from this first principle: the system must have objective monitoring capability to recognize a violation and to allow for the specification of a response or penalty; it must provide timely warning and certainly not just an *ex post facto* indication of a violation; and last, but hardly least — given the present debate in this country — there must be reasonable confidence that the verification system is in operation most, if not all, of the time.

I can say with little fear of contradiction that there is very little agreement on what would constitute an adequate system to verify the limitation or elimination of conventional forces. Perhaps I can go even beyond that statement and say that most people who have looked at conventional force verification have agreed that it poses one of the most difficult problems they have ever confronted, far more difficult than verification of a regime for nuclear-weapon limitation or prohibition.

Part of the difficulty arises from the very nature of the problem, which I and two of my colleagues, Peter Deak and Jurgen Altmann,

will be addressing. What one is really talking about here is change over time in three quite different areas relating to all non-nuclear forces. That means change relating to all kinds of forces, not just ground, air and sea — to all of the possibilities that one can imagine. It seems to me one is talking about observing and measuring change and, indeed, talking about deviations from stability over time in three quite separate categories.

The first is the simplest: war-making capability. Those of us who sat through some of the Vienna Talks on mutual balanced force reduction know how very difficult it is to agree to quantitative and qualitative limitations on manpower and equipment. A further complication introduced here, in this very simple category, is the degree to which one is talking about capability that already exists versus capability that could be mobilized in a short period of time. In summing up the Vienna Talks and perhaps those discussions that antedate the Second World War, one would have to say that agreement on simple, clear-cut, reliable measures of quantitative capability or even qualitative types of capability has proved a very difficult task.

At least as difficult, if not more so, are the two other categories. Here again we are talking about measuring change over time and deviations from what we have defined already as a stable situation.

The second category would be that of location of capability. "Deployment" is the military term. Here one is talking about an intersecting set of geographic limitations in terms of thinning-out zones, areas in which weapons are prohibited or not allowed, except at specific times, as well as technological limitations. Most recently, there has been talk about the removal of offensive weapons, defined in various ways, from specific zones or specific regions, or even from areas of crisis. In this particular category one might also talk about monitoring movement: how many forces can, in fact, be deployed outside their normally assigned areas at any one period of time. This is much like the restrictions placed by the Stockholm accords on exercises outside of barracks. The argument here is that if forces are not in close proximity to one another or to potential areas of crisis, that in itself will constitute an adequate indication, verifiable by all observers, of non-offensive intent.

Lastly, we are talking about not just limitations on capability or deployment, but on the development of new technologies or the refinement of old ones. Some of the things that have worried people most in the past seem to have been coming into fruition in the

conventional area over the last decade. We have seen not just one quantum, but several quantum jumps in the ability of conventional weapons to substitute for some of what is at least officially defined as the "lesser missions" assigned to nuclear forces. The question of substitutability, given increased destructive power and increased accuracy, is one that needs to be addressed, not only in the European context, but in many other regions where conflicts are raging at the moment. Almost as devastating in terms of impact on both controllability and verifiability is the increased mobility of systems: the ability to be transported quickly and, most important of all, to be modified relatively easily to achieve purposes and ranges for which the weapons were not originally designed.

The most difficult problems, however, lie even beyond the specification of the areas in which one would want to put time and attention into developing measures for verification. Probably the most difficult conceptual problem is simply specifying the unit of account. What is the unit which is to be limited? Even if one specifies a fairly simple scenario and defines a region in which one is concerned about conventional limitation, one still needs to specify the unit which is in relation to the risk run, if, in fact, the risk turns into conflict. In terms of academic and scientific work, not to mention political agreement, we are very far from specifying what constitutes the appropriate unit. We probably need measure that take into account not just asymmetrical capabilities, such as already exist, but the possible combination of capabilities to achieve a multiple curve effect greater than the sum of their parts.

There are other themes that were sounded this morning. There is the problem of how one would go about choosing means of verification if one could settle the unit of account. This would certainly be a problem in conventional areas, where one is not talking just about super-Power negotiations behind closed doors in a consultative committee environment. National technical means will not be sufficient if they are not accessible to the many other parties that are involved. Even on a regional basis, the lack of international access to the kind of surveillance capability that has been used so successfully in other areas will make the problem a very difficult one. And yet, we are not looking at many resources that will provide a credible system, reliable and accurate at all times and accessible even to the parties of the conflict. At least not in the short term.

Given all these areas of difficulty, we are left with really only four possible areas of hope, if not of great achievement, in the near term.

First of all, in the conventional field, in terms of both arms limitation and verification, we will have to be satisfied with not doing everything at once and not expecting that there will be quick fixes for problems that have existed for a very long time. We will have to accept and find the political consensus for lower standards of verification than we have had in the past. It may well be that we will have to be satisfied, at least in the first phases, with substantially less than 100 per cent verification. We will be looking at an evolving regime in which the development of verification measures will proceed along with the development of limited, acceptable schemes of arms control and constraint.

A second proposition is that we will have to make a virtue of clarity and of openness to the elite professional groups concerned with these issues in every country — a virtue that can be rewarded at the polls in countries where that is important. The definitions that we seek will have to embody these principles.

The third proposition is clearly not very popular with the existing arms control community. From the outset we will have to admit that, in terms of both limitations to be sought and types of verification regimes to be pursued, we will be talking about mixed solutions. This means solutions that involve confidence-building measures as well as limitations that involve technical systems, on-the-ground observer posts, sensors, surveillance technologies—a panoply of measures that will create a framework within which evolution towards greater verification and greater limitation will, in fact, be possible.

Lastly, in most cases we will be looking for, at least in the medium term, a set of regional frameworks, new forms and new possibilities for collaboration. If we look at the record of conventional warfare since 1945, we could say that that would be a very great success indeed.

Richard Garwin

I'll begin again with definitions of verification. The purpose of verification is to determine whether another party to a contract, like a treaty, is in compliance with the undertaking. It is an illusion to think that adequate verification is more difficult than monitoring behaviour in the absence of a treaty, because then you don't know what the thresholds of meaningfulness of threat are and you do not have the co-operative undertakings that should be present in a treaty to make it verifiable. The verification and the treaty formulation are intimately related and we have some experience in this. It is extremely simple to

verify a treaty which is a blank page, where no one undertakes any limitations and anything that you observe is in compliance with the treaty. You have perfect verification and yet that treaty is just as good as no treaty at all.

Treaties do more than recognize a militarily significant deviation, because they ordinarily put a fence around the boundary of military significance and can provide recognition of a deviation long before something militarily significant arises. So the criterion for a successful treaty in arms control is to provide timely warning. It does no good to have the ability to verify that the other side has launched a destructive strike if there is nothing one can do about it. The 1972 ABM Treaty states somewhere the purpose of banning effective defences against strategic ballistic missiles in order to ensure the preservation of a deterrent capability. In addition, the Treaty bans certain things in testing and laying the basis for such a defence in order to provide timely warning, so that the deterrent force can be modified before the ballistic missile system can be built to effectiveness.

Furthermore, in the formulation of a treaty, one has the opportunity to define the verification measures and to protect them. In the 1972 ABM Treaty, there is an agreement not to interfere with national technical means of verification, for instance, Earth observation satellites. Until that time satellites were uncertain of protection under the law because they made overflights of the other side's territory—of course, at altitudes far above those accessible to aircraft. Furthermore, in that same Treaty, the parties undertake not to use concealment or camouflage of the items that are to be verified.

Finally, one can establish co-operative verification in a treaty. If the verification equipment is designed together, if every piece is certified identical by the supplier and if some significant fraction of the equipment can be disassembled by the party subject to verification, one can be quite sure there are no hidden explosives, intelligence apparatus or the like.

One can also, in a treaty, ban or limit items that are no threat at all. For instance, if I were to have a ban on hand guns, revolvers, or automatic pistols, I might extend that ban to plastic toy guns that you would buy in a store. Why? Because if those were allowed in unlimited numbers, it would be much easier to have a real gun among them. So, you see treaties might insist that there are functionally related, observable differences.

Now, what is verification? Verification is not the repeated observation of actions allowed by a treaty. If I assert the theorem, which incidentally is false, that every odd number is a prime, it is no proof to show you that 1, 3, 5, 7, 11, 13, 17 and so on are prime numbers. I can give you an infinite number of examples, yet the theorem is wrong. All I need to do to show that a party is not in compliance is to show one example of non-compliance. And so, adequate verification of compliance depends on the absence of detection of actions banned by the treaty when such actions are detectable and systems are operated to detect them.

Suppose verification is less than perfect. It will always be less than perfect. We don't want to spend the money to provide perfect verification, even if we were able to do so. The question is: Are we better off with imperfect verification of a treaty or with no treaty at all, where the detection of dangerous activities would surely cost more because they could be hidden and they are not so circumscribed as in the presence of a treaty?

It is all a value judgement. What if compliance is less than perfect? That's very different from having verification that is less than perfect. I may, with my verification machinery, detect unambiguous evidence of violation. We have made mechanisms for presenting such evidence: the Standing Consultative Commission of the ABM Treaty and the Special Verification Commission of the INF Treaty. Of course, the other side can ignore the evidence and deny that they have violated the treaty, or they can claim that it is their right to violate the treaty. But, in principle, that is destructive of the rule of law, and it is also not a good portent for future relations between nations. In the end, though, if the other side neither accepts the evidence nor provides redress or compensation, one is faced with the decision of abandoning the treaty, of asserting the right under law to comparable violation — which is not a very good step — or of overlooking the violation. One has to ask if one is better off with the treaty, even though violated, than without it.

In the verification of control of nuclear weapons, especially between the United States and the Soviet Union, the INF Treaty, signed but thus far not ratified, represents a major step forward. The Treaty and its Protocols provide for steps far beyond national technical means operating from outside the territories concerned. They provide for cooperative activities, perimeter and portal monitoring, on-site inspection of destruction and the like. The other bilateral arms control

treaty, the 1972 ABM Treaty, has no on-site inspection, and the INF in that regard is a major advance over it.

Let's look at the destruction of nuclear warheads. In the United States there has been a lot of discussion about this. The INF Treaty was under fire from Senator Helms because it does not provide for the destruction of a single nuclear warhead, and that is absolutely true. We never proposed to the Soviet Union that we destroy some of our most modern nuclear warheads; in addition, the guidance systems from the missiles will not be destroyed either. That is not because destruction cannot be verified or because it is technologically unfeasible to destroy nuclear warheads or guidance systems. In fact, it is eminently feasible and verifiable. We already have in the INF Treaty the on-site inspection of the disassembly of the missiles, the removal of the guidance systems and the smashing of equipment. The warheads could be sent to a destruction plant within the home territory of the owner. They could be monitored as they are put into sealed diplomatic pouches, monitored again as to their plutonium or uranium content upon arrival at the destruction plant and, within a day or two, it could be verified that the same material had emerged, whereas the high explosive and the other aspects of the nuclear warheads had been destroyed.

To have the destruction of nuclear warheads significant over the long-term, however, would require control over production. It does very little good to eliminate 6,000 nuclear warheads if they are to be replaced by 6,000 new production warheads. Nevertheless, this is a quantitative matter. If the warheads are destroyed much more quickly than they are produced, one has made some progress in arms control. If the manufacture is limited and controlled so that only clandestine warheads might be available, that would be even better, but more difficult to achieve. In fact, the destruction of nuclear warheads and the limitation of their production or the elimination of new manufactured warheads are compatible with stockpile maintenance and the remanufacture of nuclear warheads. One need only use the perimeter portal-monitoring system to ensure that for every warhead that comes out of the limited-production-rate plant, another warhead has just gone in.

If destruction of nuclear warheads is verifiable, what are the problems associated with deep cuts in strategic nuclear weapons? One problem has been publicized here. It is the increasing sensitivity, the instability, associated with counter-force, with the ability of one side to destroy the other side's deterrent nuclear weapons before they can

be used. In fact, that sensitivity could be eliminated, and a reduced force could be made much more stable and resistant to counter-force action by a unilateral choice of basing. We don't have to design the other side's force; we don't have to tell the Soviet Union to eliminate their MIRVed weapons or their mobile ICBMs. We would just have to put single-warhead missiles into silos so that to destroy them would take more warheads than the number destroyed. We could use mobile ICBMs. We should go eventually to small submarines with a few warheads each rather than keep our present submarines with 200 warheads each. If we want to preserve the air-launched cruise missile component, our aircraft should carry two air-launch cruise missiles instead of 20.

The other problem standing in the way of these deep cuts is the increased sensitivity to destruction that the limited numbers of nuclear weapons contemplated for use as a deterrent would have. This could be resolved by strict adherence to the ABM Treaty of 1972, and by a ban on space weapons that might substitute for ABM systems. We would need to limit the existence of ABM systems and also the capability of other systems, such as air defence and anti-satellite weapons. Perhaps eventually, as deep cuts proceed, we should replace the present limitation to a single site with 100 interceptors by a ban on ABM systems, and then we could also ban the tests of the components of such systems.

De-MIRVing, removing MIRVs, is the key to improving the stability of reduced numbers of strategic nuclear weapons. De-MIRVing does not constitute a commitment to continuing along the reduction line or to halting at a certain point. It provides for the ability to continue. If we reduce the number of warheads to one on every existing delivery vehicle, on the MX, the FS-18, the Trident or Poseidon submarines, and the B-52 bomber, we would end up on either side with 2,000 strategic nuclear warheads. We would have exactly the same number of delivery vehicles we have now, so obviously the system would be far less susceptible to destruction by the nuclear weapons of the other side. Furthermore, we could reduce the United States and the Soviet forces to 2,000 warheads from the present 11,000 or 12,000 strategic nuclear warheads without building a single new system. And we could eliminate all of the weapons deployed for battlefield use, while still preserving the option of battlefield explosions of these home- or ocean-based strategic nuclear weapons.

In *The New York Times* yesterday, 10 May, there was an article by Frank Gaffney, who complains that mobile missiles should be banned

if they are to be limited, because no one can distinguish a legal mobile missile from one that exceeds a numerical limitation. Well, that is just plain wrong. If one tags the legitimate missiles, just as each yellow cab has a medallion provided by the city, then a numerical limit is precisely equivalent to a total ban on items that are untagged. Perhaps Gaffney just hasn't thought of this. Some people even talk about remotely sensed tags. This would save the cost of on-site inspection and preserve privacy, but others have spoken against them because they would allow, they feel, targetting by systems that home in on these tags. When I speak of remotely sensed tags, I speak of tags devised in a co-operative fashion, which can be sensed remotely only through the co-operative provision of a communication system. They would pose no threat at all to privacy or to survivability. So tags with seals to ensure that they remain associated with the limited items are potentially useful for any numerical limit, even for verification of the de-MIRVing, where they could be placed on the empty sockets where the MIRVs used to be.

Finally, there is a role for technology in verification. I have indicated the technology of tags and seals, which are as exciting as any weapons that I have been associated with. In 1958, 30 years ago, I served on the United States Delegation for the Prevention of Surprise Attack, a United Nations conference of ten nations. There I proposed that we build satellites in geosynchronous orbit with the special purpose of relaying inspectors' teletype messages from missile-watching sites in the Soviet Union and in the United States. Other nations have a role, even in super-Power nuclear weapon cuts. They would benefit from deep cuts. However, a reluctance to limit themselves with respect to their own numbers of nuclear weapons would be an act of self-injury. If we are to achieve a ban on space weapons, non-nuclear-weapon States will have to join in, as in the outer space Treaty or the Antarctic Treaty, because there are other nations perfectly capable of putting anti-satellite weapons or other weapons into orbit.

The United States budget for the Arms Control and Disarmament Agency has never exceeded one dollar for each \$10,000 in the Department of Defense — typically, \$20 million versus \$300 billion in the same year. The technology of verification deserves more emphasis than is indicated by these relative expenditures. Other nations can also help to perfect tools such as seals and tags, and they can certainly help in thinking through these puzzles of arms control.

I will conclude by telling you about the tragedy that befell a common (the area in the centre of many American towns that used to be

available for grazing). When one person put more sheep to graze there than his neighbours, he got a larger fraction of the total, but reduced the total yield; the others, who were looking for parity, overgrazed as well. Everybody spent more money and their benefit was less than it was before. In questions of arms control, we must suppress the very human tendency to demand as much as the other side has, because we will be better off if we have a little bit less than the other.

Karlheinz Lohs

During the last month, there have been dramatic developments concerning the question of banning chemical weapons. The United States went ahead with a complete chemical-weapon re-equipment programme of binary weapons, entering the stage of large-scale commercial production. The Soviet Union stopped chemical-weapon production last year and proposed comprehensive international verification to control storage facilities and training sites for chemical weapons. France declared its national policy of maintaining chemical weapons in so-called security stocks. So it seems we are faced with a very different situation from that of the spring of 1987. Nevertheless, in the Conference on Disarmament, a chemical weapons convention has made considerable progress over the last two years, especially in the field of verification.

What is the situation now? In NATO both the United States and France possess chemical weapons. France has stopped a new chemical-weapon acquisition programme which, it is fair to assume, began actual production in 1987.

Official information about United States stockpile sites indicates that, in addition to the more than ten locations in the continental United States, there are two locations outside: one in the Federal Republic of Germany and the other on the Johnson Islands in the South Pacific. No official information on the size of the stockpile is available, but it is obvious that the bulk of the United States chemical weapons is stored within United States boundaries. Independent estimates of United States stockpiles put the volume at around 35,000 tons, with approximately 2,000 tons kept in the Federal Republic. It is still unclear whether this estimate includes old mustard stocks and what the real figure is for the overall size of the stockpile. In December 1978, the United States Congress finally decided to give the go-ahead for the binary production, as I just said. It started with the 155 mm artillery shell disseminating sarin and an aerial bomb, the so-called Bigeye, disseminating VX.

In the Warsaw Treaty Organisation, only the Soviet Union has chemical weapons. Official data provided in December of last year point to a stockpile volume of less than 50,000 tons. According to certain information given during the visit of international experts to the Shikhany proving ground in October 1987, the stockpile is made up of artillery pieces, bombs, warheads for technical and operational missiles, and close combat weapons. The agents shown in the Soviet Union were nerve agents, especially sarin, soman, and VX, and also blister agents, especially mustard and lewisite. No further chemical weapons exist in the Warsaw Treaty Organisation, and the Soviet ones are, according to a statement made by General-Secretary Gorbachev in February 1987, all kept inside the USSR's boundaries. In the same statement it was announced that the Soviet Union had stopped the production of the weapons and was preparing for their final destruction under a chemical weapons convention by setting up an industrial-scale destruction facility in Chapaevsk.

As far as other countries are concerned, the picture is less clear. Estimates of the number of nations possessing chemical weapons at present range from 13 to 20.

I would like to make a few remarks about the role of chemical weapons in a war. Chemical weapons are not as likely to play a role in a potential East/West conflict as they are in a third world conflict. This is so for two reasons. First, the high level of NBC (nuclear/biological/chemical) production, which is standard in NATO as well as in the Warsaw Treaty Organisation, acts as a deterrent against the use of chemical weapons, especially in Europe. Secondly, the number of civilian casualties to be expected if chemical weapons were used in Europe, given the high population density of the region, lowers even their potential role for deterrence in kind. The situation in the third world is clearly different, which is one reason for the process of horizontal proliferation now visible. Vietnam has shown that the use of chemicals is not a decisive factor in the outcome of a war. As the Gulf conflict demonstrates, chemical weapons have proven to be tactically very effective under conditions of little, if any, protection and limited mobility.

As I said before, the crucial point in the ongoing Geneva talks is the question of verification. But there also exist strong constraints on any verification system. The constraints on verification of a comprehensive chemical weapons ban are partly of a technical character; however, they are also deeply rooted in political mistrust. It is urgent to overcome these constraints. In thinking of a new comprehensive

approach, it is crucial to include political, technical and, last but not least, economic measures.

I think the following suggestions for solutions are reasonable. First, enhance the efficiency of technical means of verification of a chemical weapons ban. This could be done through a prohibition on the use of toxicological research results for new chemical weapons systems and any other activities in this field. Co-operative measures could also be undertaken: an exchange of basic research results in toxicology and an exchange of information on new developments in monitoring devices and on installations within the borders of a party to a treaty. In addition, co-operation and an exchange of medical information about, for example, acute and delayed toxic effects of chemical compounds related to the forthcoming chemical weapons convention would be helpful. Joint verification activities could include a further step-by-step multilateralization of national technical means and monitoring equipment. They could also embrace a moratorium on the development, testing, production and deployment of militarily relevant chemicals that have not, up to now, been considered chemical warfare agents. A very important point is openness in military matters related to the training of troops, civilian services in chemical production, and first aid in cases of poisoning. This would remove sources of suspicion and create clarity, and would result, I am sure, in a new confidence and a new strategy for peace-keeping among States and peoples still living under different ideological systems.

There is an interesting proposal to the effect that the first step in chemical disarmament and verification procedures could be taken by establishing on a bilateral or multilateral basis chemical-weapon-free zones. This could take place in Europe on the basis of the proposal of the Socialist Unity Party (SED) of the German Democratic Republic and the Social Democratic Party (SPD) of the Federal Republic of Germany; and in the Iran/Iraq region because of the terrible ongoing use of chemical warfare agents in the conflict there.

People everywhere expect a concrete indication that chemical weapons are being banned and they expect a verification system that they can understand, something comparable to the International Atomic Energy Agency (IAEA). Perhaps IAEA is not perfect, but it has worked over decades, handling problems carefully, effectively and in a non-confrontational spirit. We must not underestimate the economic aspects of particular interest to those countries which have problems of inflation and employment and a very special infrastructure for the chemical industry. I would also like to stress the very great importance of

considering conversion in connection with verification. In my opinion, conversion and verification are related.

Martin Kaplan

In the biological weapons-biological warfare area, we have two treaties that serve as the underpinnings of all of our efforts to date to keep biological weapons under control. The first is the Geneva Protocol of 1925, which really prohibits only the first use of chemical and biological weapons and says nothing about stockpiling or retaliation in kind.

The second treaty, the 1972 biological weapons Convention, which was ratified in 1975, is more important only in the sense that it is comprehensive. As an act of statesmanship, President Nixon unilaterally gave up biological weapons. Even though they have been considered bad weapons militarily, this act stimulated other countries to adhere to the Convention, and it has served as a brake on development. The situation may be changing now, according to recent information, and some alarmist scenarios about the development of biological weapons have been painted. One of them, the scenario about genetic recombinant, is vastly overblown, when one thinks of the micro-organisms among our armaments today that can serve much better.

At the last biological weapons Convention Review Conference, in 1986, the question of how one verifies such a treaty dominated the discussions and led to some real soul-searching and further meetings. One was held in March 1987, to see whether steps could be taken to fortify the Convention with respect to verification. A very important set of recommendations concerning the exchange of information and data was agreed upon at that meeting, and has been adhered to by the United States and the Soviet Union to a rather large extent, though not completely. Unfortunately, some NATO countries and others have not fulfilled the moral obligation — it was not a legal one — to vastly increase the exchange of information on work in laboratories and other data that would promote confidence on both sides.

One step that was advocated at the meeting was the declaration of high containment facilities. Such facilities work with very pathogenic micro-organisms, such as the marburg virus and the lassa fever virus, which would be dangerous to the community if they escaped from the laboratories. The idea was to have all countries declare where such laboratories exist and to what extent and on which micro-organisms they are working. High containment laboratories belong to the P-4

category, but the P-3 laboratories, which deal with highly infectious micro-organisms, should also be listed. Some people feel that all laboratories dealing with micro-organisms should be listed. The number to be listed could run into thousands or even tens of thousands, if you consider that every laboratory dealing with microbes should be reported. What's most important is to list the high containment laboratories and to encourage trust and confidence.

Other measures agreed to concern reciprocal visits. Invite scientists from the other side to visit the laboratory. Declare what you are working on, without revealing any industrial secrets, including microbiological protective work, which would not be prohibited under the 1972 Convention.

There should be no secret laboratories; any secrecy is harmful because of the alarmist scares that are raised. Even in a defence laboratory, there is no problem in stating exactly what you are working on, for example, vaccines for anthrax. Such declarations remove a lot of the suspicion that might otherwise arise in verification in the microbiological field, then, it is more a question of openness than anything else. The lack of openness has resulted in some very unfortunate incidents, which have poisoned the atmosphere in many ways. For example, despite what many scientists consider as indubitable proof that yellow rain was not a chemical warfare agent, but rather bee feces under natural conditions, the United States has persisted in claiming that the substance was used, in fact, as a chemical weapon.

Similarly, the United States accusation against the Soviet Union that the outbreak of anthrax that occurred there in 1979 was caused by an explosion of a biological weapons facility has largely been neutralized by the data on the epidemiology of the disease that has been forthcoming from our Soviet colleagues. Had this openness and willingness to invite inspection and share data existed before, these harmful side-effects would have been avoided. So, basically-speaking, openness, reciprocal visits, declarations of what you are doing and microbiological research in many areas make it very hard to keep things secret for very long. Colleagues know what is happening and what is being done.

Joshua Lederberg

It was a major turning-point when agreement was reached on the biological weapons Convention of 1972. As frail as it is in terms of

procedures for verification, I don't think there is any serious doubt that its central prohibition on the development, production and stockpiling of biological agents for hostile purposes has been complied with. That is to say, there have been no allegations of the stockpiling of weapons on any substantial scale. We do not see evidence that biological weapons play a part in the military doctrine of any country. There was a very public declaration of the destruction of stockpiles in the United States, and I don't think there is any scepticism about the Soviet statements that they had destroyed what they might have had prior to 1972. The Convention has other provisions that are more difficult to define precisely. The restrictions it places on the development of weapons would pose very severe semantic and juridical problems if substantial cases were ever brought to trial. There is a gray zone of uncertainty about whether activities alleged to occur really have occurred and whether, if they did occur, they would fall within the province of the agreement. But for the time being, I would say that the Convention is in very good shape.

There is a second aspect to it, however. Unlike most of the other threats that have been discussed up to now, the threat to humanity from infectious disease does not begin with military activity. That threat is with us all the time; it is a part of the world of nature that causes enormous suffering under any circumstances. Of course, we have to be mobilized to co-operate in order to protect ourselves against natural disease, but this becomes much more difficult if we do not have a cooperative approach with respect to the application of disease agents to military purposes. Because of natural disease, research on the organisms that can cause it, on their pathogenic properties and on how they can be transmitted from natural sources to people and among people, is a very necessary part of medical research and of enormous humanitarian concern. It's imperative that we continue to do that.

As more and more is learned about the agents of disease, however, that knowledge becomes susceptible to conversion. It can be utilized for aggressive purposes, for developing weapons. The time needed to make a weapon out of a microbe that has been studied for medical purposes would not be very long. A large industrial facility would not be required, as is the case for nuclear weapons, nor would very large quantities be needed to produce devastating effects.

Thus concern in the biological area has more to do with intentions than with realities, and intentions, of course, are very difficult to monitor. We don't always know our own intentions in the depths of

our hearts. Suspicion about the intentions behind activities elsewhere has poisoned the atmosphere in many ways and always poses the danger of provoking a renewal of the arms-race mentality in the biological field. This is not a problem that has an easy solution. The most helpful thing is the principle of openness that Dr. Kaplan indicated. The surest sign of malevolent intention is to do things in secret and to be unwilling to discuss them anywhere. By the same token, it is a good—though not perfect—indication that work is being directed towards medically significant purposes when it is carried out very openly.

There has been great progress in this direction. The meeting of experts, the exchange of information and many other rather informal modes of communication are providing answers. I think the mood is very good, at least as far as the major Powers are concerned. We have much less information with respect to what is going on in smaller countries, which are not usually thought of as the source of innovations and weapons. But, of course, this class of weapons may pose a very serious problem for the whole world. I'll return to my original point. Unlike the case of most other weapons, the use of biological weapons is a matter of grave concern to many others besides the parties in a given conflict. To start an epidemic in one country is to pose a threat to the rest of the world. Therefore every country and every person have a very serious stake in making sure that the possibility of any military use of biological agents is well regulated. There is no answer to the problem other than a co-operative approach in working on problems that are a matter of common concern, and doing this as broadly and openly as possible.

DISCUSSION

Bernard Feld

I have a question with respect to the definition of conventional offensive systems. Frequently, a distinction is made between offensive and defensive systems. On the other hand, there are many cases in which what may appear to one person as a defensive system may look to another very much like an offensive system. Is there some relatively straightforward way of verifying that what is said to be a system with purely defensive capabilities is indeed such a system?

Catherine Kelleher

The bulk of opinion up until now is that there is no such thing as an absolutely clear-cut offensive system, particularly in the non-nuclear

area. But clearly there are gradations. You have probably heard about bridging equipment, which allows people to move forward very rapidly onto somebody else's territory. Another area that is much discussed is tactical aircraft. The question asked is: What do you need a tactical aircraft for, except for strikes against someone else's territory? Weapons which make it possible to carry out a surprise attack within a very short period of time would be high on the so-called offensive list. If you come down to basic definitions, you can use a rock either offensively or defensively, and in the case of the distinction between strategic and tactical, it all depends on where you sit. In some of the more interesting alternative defence notions that have been advanced with respect to European balances, one is talking about kinds of equipment, kinds of infrastructure, even kinds of locations. Let me take a very specific case. If you locate all your ammunition very far forward on your territory, you make it fairly clear that you don't expect it to be overrun by the other side. That in itself, in the view of many, would be considered indicative of a defensively deployed structure.

Serguei Kapitza

If we begin with these ideas, we begin acting at first as if we were concerned about a system of measures that would constitute a certain continuation of military intelligence. But what we are really after is the development of this system into a long-term political system of measures. It is the evolution from one stance to another that really should be the subject of our research and discussions. Of course, we can say that this involves verification and the continuation of military intelligence by other means, to paraphrase Clausewitz; that it is a contribution to our common security and understanding in a world of growing interdependence. We can look at it in two ways. If we limit ourselves only to the short-range approach, I should say "tactical" (in the sense of national and local), we will get a lot of opposition from the military establishment. But if we invoke the political measure and these long-term ideas, maybe we will have a better chance of doing it.

Then of course, there is the question of measure. A single nuclear bomb may be much more dangerous than a whole division of ordinary troops armed with machine guns. So again, it's not easy to compare these items. There is another point: To what extent can verification in the conventional sense be extended so as to apply to the way officers and the military are trained? That involves military doctrine. I think there is a certain analogy between military doctrine and research on new weaponry. In a sense, the future of both depends on the development of our mentality.

Catherine Kelleher

I think that your point is really very well taken, that what one may be talking about in terms of openness looks a great deal like military intelligence. That might not, at least as a first step, be a bad thing if one is talking about the process of developing reassurance, and, at the same time, one has in mind a gradual evolution towards a longer-range system. In such a process, there are points of control that can be reached. The evolution of inspection regimes into practical co-operative measures is behind the entire push in confidence-building measures. We have had two experiences that are significant. The first is with respect to the Stockholm accord, under which we have now had nine joint inspections of military exercises. That series, limited as it is, has proven that this kind of activity is evolutionary in nature, simply because problems come up that aren't specified under the particular agreement. If there is already a framework in which co-operation is assumed—a big assumption—it does in fact tend to lead to some fairly good informal evolution. The second experience we have had, which has not been analysed carefully enough, is the co-operative activity undertaken with respect to the transfer of the Sinai. That took place in an atmosphere of considerable hostility, but a mixture of measures, involving both electronics and personnel led to almost enforced trust-making between the two sides. That experience provides one model for the kind of withdrawal of actively confronting forces. There are others, but this one is particularly rich, partly because of the hostility involved.

I think as far as the unit of comparison is concerned, in most instances, you are talking about a combination of ground, sea, and air forces, and it is almost impossible to come up with a unit of account that allows you to add and subtract across the various categories. Up until now, we have mostly been using measures that focus on either specific weapons systems or specific functions. It seems to me that, even for the medium term, that is probably not the right way to go. I have not seen an arithmetic formula that would allow us to come up with an equivalent set of capabilities. Most military capabilities are asymmetric and reflect national traditions that are much stronger than maybe even the present conflict situation.

The questions about training and doctrine are clearly important ones. While we look at particular, partial steps being taken now, we shouldn't forget the future because, as you say, the investment is there. I would add one further category: exercises. There is a great deal that can be done in terms of the content of exercises, and they are

perhaps proof positive of what is going on in terms of training and doctrine.

Bhalchandra Udgaoonkar

Have you considered the complications about verification and confidence-building which arise when arms are supplied to a third world country by a super-Power as part of its global strategy, especially when, historically, there may often have been a strong divergence between the declared intentions and actual use of such arms?

Catherine Kelleher

If one is talking not so much of limitation as the establishment of a verification regime, one has three "handles" on the situation. First, if one is talking about the control of weapons at the point where they enter a geographic area in which control is maintained, and where that weapon is either prohibited, prevented from entering, or in fact controlled in its movements within the region by electronic or sensor means, then one could say that this kind of monitoring could go on within any region.

A second kind of approach comes out of a number of the spin-off technologies for verification of, for example, the nuclear fuel cycle. There are ways of monitoring infrastructure developments around a specific weapons system to ascertain what its true purpose is, particularly where certain kinds of technologies are modified within a country which has imported arms. That's not always successful, but it is at least possible, since the development is presumably not being carried out in a totally clandestine manner.

Last but not least is on-site inspection. In the INF framework, on-site inspection has to do with a long list of facilities which are monitored either on a continuous or challenge basis. Earlier techniques, particularly ground observer posts, regular overflights or ground patrols, could be adapted to any geographic area with the usual political and legal problems about the presence of an observer team.

Joseph Rotblat

You said that the first and major criterion for a verification system is that it should be capable of detecting deviations of military significance. Can you define what you mean by military significance?

Catherine Kelleher

If one is talking about a regional context or a specific functional context, then one has to decide what the metric by which military

significance can be measured is. Let me give you one example from the Stockholm accords. The figure regarding constraint on the number of men taking part in an exercise is 25,000. The figure 25,000 was agreed to not because the number is thought to be the decisive factor in a conventional battle, but because it is assumed that an exercise involving more people would pose a threat of breakout from the exercise, i.e., such an exercise could suddenly turn into an invasion, and that, to carry out an invasion, you would have to have more than 25,000 men. Maybe, the number is really 15,000 and maybe it's 35,000, but within that band width, one has defined what constitutes a militarily significant risk. This is an example of the kind of very tough political or politico-military choice that has to be made. At some point, however inaccurate or crude our metric is, we will have to make that choice, if only because a verification system makes little sense without that kind of definition at the beginning.

Jurgen Altmann

I would like to take up the remark on military intelligence made by Serguei Kapitza. Up until now we have understated the danger that could be associated with openness in military matters. He who knows about the capabilities and locations of the troops of the other side could be very well prepared to mount a surprise attack. I think information has a double character, as technology generally has: it can be used for good as well as bad purposes. It is all the more important in the field of conventional armaments reduction to try to separate those two possible uses of information from each other. In the conventional arms field the possibilities for doing so are somewhat greater than in the strategic field, because co-operation is generally needed. States are probably willing to co-operate only if they see that they won't be more endangered with the verification scheme being devised than without it. I see some chances that co-operative measures for verification of conventional arms limitations and reductions can be devised in such a way that the information gained will suffice to assure every side that no surprise attack is being planned. On the other hand, it is necessary to prevent the dispersion of too much information on military details, which could help prepare an attack. Sensors and equipment could be specifically designed to assist in this matter.

Peter Deak

Professor Kelleher used the term "verification system". I think it is a principle accepted worldwide that disarmament and confidence-building activities have to be verified by every means and method

available. In the systems theory approach, control and feedback are integral parts of every process. Today, verification is an essential element of the disarmament process. Nowadays we see that separate verification systems are attached to each agreement. This is very good, but it leads to contradictions and multiplied costs. The verification process has to be coherent and interactive. The role of international organisations in verifying different agreements could grow. This was my first point not only for the conventional sphere. On-site monitoring does not exclude monitoring by national means, which is technically more accurate. On-site monitoring is primarily of a confidence-building nature. I said the control was by national means, but not only in one's own country. The bridge between the two could be built by the exchange of information. In this respect, the interests of small countries must be examined, since they don't possess such means.

In the conventional sphere, the focus must be on monitoring combat weaponry, which can be checked objectively by instruments. Combat capabilities in a modern army are supported primarily by technology. The movement of combat weaponry is rare, but the movement of manpower due to training and so on occurs more often and can give rise to undesirable assumptions. The major focus must be on the number, capabilities and stationing of offensive weapons.

Catherine Kelleher

Looking at specific kinds of capabilities in relation to the combat situation, my only concern would be about establishing regimes where there is no conflict going on and where the risk of conflict in the near future is low. What one wishes to do in such a situation is prohibit either certain functions or certain weapons from being introduced into the region. That's increasingly difficult, as each area of the world develops both countries that produce equipment and countries that are interested in making their technology available to others of the region with whom they are politically allied. Yet, I think it's worth doing so. The rate of diffusion of technology is such that though one takes every opportunity to limit its further spread, one realizes that one can at best only delay the spread of highly sophisticated combat capability.

Virginia Gamba-Stonehouse

First, you said that we are far from developing a verification system in the conventional field, and I agree with you. In your opinion, is it more feasible to sustain a weapon-free zone than a conventional weapon

limitation agreement? Secondly, your points on what a verification system should consist of are based on the European region. Would it be possible to apply a system to other regions that lack the advanced technology that would make this type of verification possible? I would like to say that it is one thing to have weapons systems that are very sophisticated, but I wouldn't agree that developing countries have the money or the technology for good communications, for example, for early warning systems. How would you cope with that difficulty? And finally, what is your opinion of the traditional view that uncertainty relating to the quantity and quality of the means to wage conventional warfare enhances, rather than reduces, deterrence?

Catherine Kelleher

Regarding your first question, it is the opinion of most people in this field that it is easier to verify a weapon-free zone than weapons limitation. This assessment, however, is based on past experience, or what is understood as past experience. If one considers some of the sensor and tagging technologies that are now available, which others here will talk about, it is possible to think of weapons limitation on certain large items. One is not talking about every single soldier having an electronic tag around his neck, but about weapons systems, whose presence or absence could be verified with a certain degree of credibility. The basic problem is deciding how much is too many. I will go back to the example of Central Europe, simply because I think the problem is most dramatic there. If one is talking about 50,000 tanks, does it really matter if one goes down to 30,000 or 28,972? There are very few who would want to make the kind of judgement that has to be made in order to determine what kind of verification system is needed.

This brings me to my second point. I agree with you that I spoke too quickly regarding the availability of offensive conventional technologies. However, their potential, in terms of the surrounding talents or resources, is there and could be exploited. I think some work was done during the United Nations second special session on developing ideas about shared verification systems or shared information systems. One proposal, in particular, concerned surveillance systems which would enjoy open access. These proposals were not well developed, and I know they were not taken seriously by my own country. But, ultimately, one will have to talk about this kind of accessible system. I'm not sure whether it should be organized on an international basis or on a regional basis, but that possibility needs to be exploited. Those who see the preservation of conventional stability

in a region or in a relationship with one or several countries as a national goal may become more willing to think that verification measures, even only those limited to a particular conflict, must accompany changes in military capability. I think that's an aspect that we have not paid much attention to.

This leads to your last point, which concerns uncertainty. One can argue with at least equal historical validity that uncertainty has led as much to conflict as it has to deterrence. So I think that accessibility of information, even within the limits Jurgen Altmann has brought to our attention, would itself be a baseline against which verification systems should be measured.

Theodore Taylor

I find it useful to think of two categories of verification. One is essentially *don'ts* and the other is *dos*. An example of a *don't* is: don't test ABM systems. There are examples of *dos* which I see flowing primarily from the INF Treaty, and from the negotiations on START and further deep cuts: make the deep cuts. The United States Administration has made a point, which I think is invalid, regarding the elimination of warheads. It says incorporating warhead dismantlement into the elimination of strategic missiles can't be done without revealing classified information. Apparently a fair bit of the establishment believes that. Some of us have been looking at the problem in a preliminary way and have concluded very solidly that, as Dick said, these warheads can be verifiably eliminated without revealing any classified information. One final point about actual elimination is that there are situations in which you actually make money by doing something rather than just save costs by stopping something. For example, one route to the elimination of the uranium 235 that's in weapons is to consume it in power reactors. The resource value of all the uranium 235 in the world's warheads is \$50 billion. A preliminary cost estimate for dismantling verifiably all those warheads is less than \$10 billion; so there's a profit of \$40 billion. Verification is not all negative: a lot of it is very productive, and experts in nuclear-weapon design can get turned on transferring from weapon development to weapon destruction.

Richard Garwin

No details of nuclear-weapon design, except the amount of uranium 235 and plutonium in the warhead, need be revealed. I haven't thought of a way to avoid revealing that information. That's one reason why

one would not necessarily want to make this information public: it's enough to tell the other side.

Gloria Duffy

Catherine Kelleher mentioned that we may have to scale back our expectations of intrusive verification and the perfection of verification systems in the future. At the moment there is a debate going on in Washington about the wisdom of on-site inspection for a START agreement. Now that on-site challenge inspection has become a reality, I think that there are a lot of people, in industry and especially in the intelligence community, who aren't thrilled about the more comprehensive types of inspections that might be involved under START. I think this is an issue that will be settled in the next Administration, and we may well see a START agreement without the United States demanding on-site inspection.

I have a question for Professor Garwin. As you know, there are a number of private, commercial developments going on in the satellite area, for example, Landsat and the French satellite programme. Do you think that access by the press and the public in this country and elsewhere to data on the weapons systems of both sides will have a positive or negative effect?

Richard Garwin

Yes and no. One effect might be to drive the nations that have agreed with one another to be open about their activities in pursuit of a treaty to hide them because they wouldn't want them revealed to everybody else. If there is to be an internationally supported system, one ought to start by persuading the nations that operate systems to make their information available. That would be a lot cheaper than having a separate satellite system. Probably there are already systems that are far better performers than those being considered, and so one should not imagine that treaties are limited to those things that can be verified by the systems proposed for international use. For instance, in my opinion, space weapons are not necessarily weapons of mass destruction, but they should be banned because they could serve, or seem to serve, the role of defence against ballistic missiles, and thus drive up the number of offensive weapons. One might have very high technology and very costly systems for verifying a ban on weapons, and one might not necessarily want to reveal the characteristics of all these systems. So, I would in no way hinder those people who want for any purpose to put sensing equipment into space, whether for

newspapers or whatever, but you have to expect that other people will develop window shades because they won't want the whole world to see what they are doing, even though they accept some friends looking in, or occasionally a powerful adversary.

Question

Can you give me some explanation of how de-MIRVing could be carried out?

Richard Garwin

The problem is not to make certain that the sockets remain empty of the MIRV. That's easy enough. The problem in this case is to achieve timely warning, because it is only a tag, like the medallion on a yellow cab or the seal and tag on your electric meter, that would be used. It could be removed with a pair of pliers. But, if to gain an advantage over the other side, one has to manufacture the warheads and install them all within minutes, one has achieved a very great advance, because that is not feasible. Tagging would simply involve putting an aluminum balloon in the socket, having a fibre-optic cable, which links the balloon and the structure of the MIRV dispenser, and placing the two ends of the fibre-optic cable into an electronic chip which would continually sense the transmission, the delay and the intensity of the light which is coming through. The chip could be made tamper-proof, or at least tamper-resistant, and could be arranged, when brought into the proximity of a radio transmitter receiver provided by the host country, to transmit an inquiry from a satellite and relay immediately the response. And so with several hours' warning, one would inquire about the ninth socket on the 173rd SS-18 and verify that the chip was still connected to the seal, the tag was still connected to the seal, and presumably still connected to the MIRV bus. Now very occasionally, one would want to make sure that the other side had not done some fiendishly clever thing and all the seals were lying in the silo right next to the fully armed weapon, and so, once in a great while, one would verify the integrity of the system.

William Epstein

There are a number of methods of verification—on-site inspection, national technical means and good old fashioned spying—which have led to a great deal of exchange of information and have made people aware of what is going on. The combined effect of all of these methods surely must be to create such a deterrent that it would hardly be

worthwhile for any country to engage in any important clandestine activities.

Now I would like to give you some information about what's going on here. Last December, the General Assembly adopted, by an overwhelming vote, a resolution calling for an amendment to convert the partial test-ban Treaty into a comprehensive treaty, and discussions are going on right now about the best way to proceed with this. The Treaty provides that an amendment will be binding on all parties once the majority of them, which must include the Soviet Union, the United Kingdom and the United States, have ratified it. Thus all the potential nuclear-weapon States—India, Pakistan, Israel, South Africa, Argentina, Brazil—which are parties to the partial test-ban Treaty would be automatically bound by a ratified amendment.

Richard Garwin

In response to the question about the synergistic effects of different means of verification or intelligence or spying, the answer is yes, that helps increase the level of deterrence and the degree of compliance. Even if one only achieves an earlier indication of preparations for an attack, the fact that the other side knows that it will likely be detected means that it cannot count on the superiority necessary for successful attack, and so that too increases deterrence. However, one should also realize that the existence of these other systems adds to the "noise". In the United States particularly, alarms are raised about the other side's violations, for which there is no evidence.

Julian Perry Robinson

I have a comment to make in the area of verification and chemical warfare. How does this all-important principle of openness relate to commercial pressures? Obviously in the commercial world there will be quite a lot of incentive to keep research and development in some of these areas rather quiet.

Joshua Lederberg

I think we could work out a regime where the general nature of the organisms that we use in industrial research could be widely known. We don't have to have every detail about what they are and about what hormone or what products are involved. It's not difficult to know whether a laboratory is working with an infectious agent of severe pathogenic potential or whether it is being used for the more usual industrial purposes. At the national level, we do have very strict

regulation of pathogenic organisms used for vaccine production. I imagine that we could extend that to international surveillance as well so that we would know precisely what kinds of pathogenic bugs are being produced in what facilities, even for vaccine production.

Martin Kaplan

As I mentioned this morning, industrial processes usually deal with non-pathogenic organisms, and these are easily controlled. When you get into the pathogens, you are in the basic research field. I really don't see much difficulty in getting this regulated and getting the information out.

Question

There is a need for international verification of both biological and nuclear weapons, especially biological weapons, which can be used by terrorists. Would it not be interesting to have international studies carried out that would be backed by big Powers with some experience in monitoring? Perhaps we could then create, under the auspices of the United Nations, a group of specialists to direct this monitoring.

Karlheinz Lohs

I have a very brief remark to make about the use of chemical weapons by terrorists. This is a real danger, you are right. Remember though that terrorists can produce chemical warfare agents or the new type of binary weapons only in small quantities, not on an industrial scale. It is absolutely impossible to verify the production of chemical weapons in small quantities on a small scale.

Martin Kaplan

Unfortunately, you could do a lot of damage with very few organisms of certain types. I don't see how you could control this, or verify that it is not going to be done. I might say that some of the allegations in the last decade have been exactly that, allegations. For example, the introduction of hemorrhagic fever and African swine fever into Cuba was considered to be an act of biological warfare. Fifteen years ago, there were accusations in India that some work was being done to introduce yellow fever there. Terrorists and national Governments are worried about controlling biological warfare agents. From the terrorists' standpoint, biological weapons do offer great difficulty.

Joseph Rotblat

I have a question for Karlheinz Lohs. You said that the present estimate of the Soviet Union's stockpile of chemical weapons is less

than 50,000 tons. Not long ago the figure of at least 300,000 tons was mentioned by SIPRI and the Pugwash Board, both very reliable sources. How does it come about that there is a difference of such an order of magnitude in the estimates?

Karlheinz Lohs

This figure of 300,000 tons mentioned by SIPRI and others was based on speculation. The figure of 50,000 is the first official figure issued by the Government of the Soviet Union, presented by Gorbachev himself. If you add in figures for chemical compounds like phosgene or hydrogen cyanide, which were used in the First World War and are still used in the third world, but are not generally considered chemical warfare agents by the super-Powers, then maybe you will arrive at 300,000 or more tons.

Makoto Momoi

My first question is directed to Professor Catherine Kelleher. You have emphasized the need to monitor the refinement of old technologies. My association with the development of SAMs and ASMs in Japanese defence weaponry has indicated to me that if you have a very good, advanced, simulation technology and technological centres, you can do without a lot of tests. If you have to be very careful about verifying conventional, but new, technological weapons systems, perhaps you should pay attention to simulation technologies and simulation centres.

The second question is directed to the gentlemen who described nuclear weapons. In counting those weapons, do you include what we call dual-use weapons, for instance, Tomahawk cruise missiles?

Catherine Kelleher

I would agree with you that the simulation centre question is a fair one, although I think that Simulation capabilities are not that well diffused. But I was thinking of even simpler sorts of modifications, for example, the extension of air-borne stand-off missiles. Here, one is talking about the importation of technology. Perhaps that's the control one uses. Perhaps more importantly, one gets back to what, in conventional weapons, tends to be a rule of thumb: one is never talking about a weapons system *per se*, one is always talking about a weapons system deployed in a particular position, with respect to a particular scenario. Unless all three factors are specified, one probably doesn't have an effective control on the weapons system itself.

Richard Garwin

The question of the verification of sea-launched cruise missiles, of course, is an extremely difficult one. If we were to apply the same philosophy that we did in SALT-1 and SALT II, then if such a missile had been tested with a nuclear warhead or deployed with one, all the missiles would count as nuclear-armed. But the United States and the Soviet Union agreed in early December that although it would be necessary to limit the nuclear-armed sea-launched cruise missiles in conjunction with the START agreement, that would be done in a separate treaty. This is one of the principal problems holding up the completion of negotiations on a START agreement, I suppose. The options go from banning all such cruise missiles in United States and Soviet inventories to counting all of them as nuclear, or to tagging them whereby a certain number, perhaps 400, could be nuclear, and 600 could be non-nuclear. This would not be adequate if one side wanted 100,000 conventionally armed cruise missiles. I should note that the United States cruise missiles cannot be converted from conventional to nuclear warheads in the field, although it would be simple to add that feature to new cruise missiles.

William Epstein

The chemical weapons negotiations have been dragging on so long and it looks as if they will take a lot longer yet. Wouldn't it be better to conclude a treaty banning all chemical weapons right now, even though the level of verification would be very imperfect, than to have no treaty at all?

Karlheinz Lohs

I completely agree with you. To have any agreement is better than to have no agreement. But let me stress that at this stage it is the problem of safeguarding commercial secrets that poses the biggest obstacle to developing a verification system.

Rolf Ekeus

My view is slightly different. I feel that a ban which is not perfect is not a good ban. The whole negotiating group of non-aligned and neutral countries has discussed this issue very carefully and is convinced that the convention should provide for a total ban on production, stockpiling and acquisition. It should provide for the destruction of all chemical weapons and of course their non-use. That

is, indeed, a tall order. But the problem is not that big in negotiating terms.

It has been mentioned here that the chemical industry is a problem in the negotiations. We have covered this matter to a considerable degree. The controversial issue is the production of toxic or super-toxic chemicals that are not traditional weapons agents, but that could perhaps be used for chemical weapons. As we pointed out in our discussion on biological weapons, protective arrangements are like fingerprints or signals indicating those facilities that could be used to produce weapons. If we can get such facilities declared, in addition to those which have actually produced weapons—and you know all of those should be destroyed under strict international control—we will have possibilities for data reporting and also for carrying out *ad hoc* inspections. I think we have now circled the whole area, and we can be quite confident that the ban can be absolutely complete and the verification sufficient, i.e., related to militarily significant amounts of chemicals. There is no doubt that it is possible to make some nasty things in small quantities. But even if you produce the stuff, you still have to store it, produce munitions, fill them with chemicals, store the munitions, transport them to your troops, and train your troops in their use. This process will provide us with a lot of warning signals, and the crown on the whole exercise is, of course, the challenge inspection without right of refusal.

Finally, there is the question of secrecy. It should be possible to find ways not to divulge commercial secrets in a factory which is undergoing an inspection. The inspectors will be approved in advance for a specific country from a roster of experts, so that will guarantee a certain level of independence and responsibility on the part of the inspectors.

Lameck Goma

Even after you have perfected the mechanisms for verification, what do you do with parties to an agreement who do not observe it? The aim of verification is not just to have a mechanism, but to prevent the use of certain weapons and bring about peace. Is enough being done in this direction?

Martin Kaplan

What happens if signatories to a treaty violate it? We have a perfect example of that in the violation by Iraq in Iran of the Geneva Protocol, to which they are both signatories and which forbids the use

of chemical and biological weapons in war. Although the United Nations team clearly established the fact that chemical weapons had been used in Iran by Iraq on several occasions, there was no cry of international outrage. When a violation happens, there should be such opprobrium attached to it that the violator is outlawed.

Karlheinz Lohs

Can I add one sentence? Verification without confidence will never work. If you have no confidence, all the best technical solutions will not help prevent a violation of a convention.

Richard Garwin

The question is: What happens if one party, without first denouncing a treaty, violates it? I agree that compliance with treaties to which one is a free signatory is very important and ought to be taken up in the United Nations or in the World Court, as appropriate. The other question is: Is an imperfect treaty better than none? Some imperfect treaties are better than none, some are worse. I would certainly not join in a universal statement that imperfect treaties are better than none. Finally, let me say that if we ban chemical weapons, we must ban even the old-fashioned chemical weapons of the First World War, those available at the time the Geneva Protocol was signed. We would have a better chance of ensuring an effective ban if we banned both lethal agents and non-lethal agents.

Catherine Kelleher

Perhaps I can give you an answer that pertains to all treaties, which comes from the great legends of political scientists. All treaties are signed *rebus extantibus*, but circumstances are almost never unchanging and perceptions can always change. We are in danger of putting far too much weight on verification itself. Verification is an instrument. Once one has arrived at a political decision of what constitutes a militarily significant violation, then and only then can the instrument of verification come into being. Unless one begins with that understanding and realizes that verification is always going to be less than 100 per cent reliable, one runs the risk of raising the expectations of the public and even decision-makers far too high. It is also easy for the scientific community to think that it has found the perfect method without remembering that the basic question is: Which measure is adequate for the political will that's involved in the agreement? So I would argue that an imperfect treaty must be looked at in terms of its imperfections and what's involved in terms of the

imperfections as perceived by its signatories. Then and only then can you decide whether it's adequate or not.

Julian Perry Robinson

One of the themes which is particularly instructive in the chemical area is the contest between adequacy and feasibility in the system. You can measure both concepts, adequacy and feasibility, on the scale of stringency of verification. If, as you ascend that scale from non-intrusive up to very intrusive methods of verification, you hit the point of unfeasibility before you hit the point of adequacy, then you are not going to get a treaty. Professor Kelleher has just introduced a new point: how one should think about adequacy here. There is a correlation between the stringency of verification sought and the importance attributed to a certain weapon. To go on seeking stringency or, conversely, to go on declaiming that the treaty will be unverifiable is to state that great issues of national security depend on the weapons under negotiation. That is questionable, since there are three main ways of protecting a country against chemical warfare: deterrence, protection of one's forces, and arms control. So adequacy is the break-even point in that trade-off between the *status quo* (maintained primarily through deterrence) and a treaty regime (with less than perfect verification). Reconciling perceptions about where that break-even point is reached is obviously a highly political process, and this is where we need to subordinate the type of technical discussions we have been having so far.

Francesco Calogero

There is a very great difference between a treaty that forbids the use of chemical weapons and a treaty that forbids their possession and production. If the latter kind of treaty has an effective mechanism for verification and you verify that there is a violation, you have a lot of time in which to address the problem. This is very different from the situation in which the treaty forbids only use. At present, we have a treaty that forbids use, and its limitations have been shown dramatically; now we are trying to achieve something that goes beyond that.

Serguei Kapitza

Verification is really a means, not an end, to developing attitudes of confidence and trust. Perhaps when we speak about chemical weapons we even overestimate their importance to a certain extent,

but they do certainly generate very powerful emotional and political feelings. From this point of view, the whole idea of outlawing these weapons is a very positive development. The same, of course, goes for bacteriological weapons. On the other hand, it is the instinct of a scientist to circumvent the laws of nature, to explore all the possibilities that exist, not because he will realize them, but because it's his way of thinking. It seems to me in this case that we do have to think about all the possibilities that exist, only to demonstrate that we can outlaw these weapons and develop public attitudes towards them, as a part of the whole process of disarmament.

3. GLOBAL SECURITY

Yasushi Akashi

The topic "Global Security" is very broad and general. However, it has acquired a sense of great urgency, and the need for clarifying many related aspects of this question has become very evident. It is particularly appropriate that this subject is being discussed here at the United Nations, the Organisation that was created to serve the interest of collective universal security. While the United Nations Charter created the edifice of universal collective security that has, over the years, performed a number of useful functions and contributed to international peace, there have been certain weaknesses, and, in particular, the measures envisaged in Chapter VII (action with respect to threats to the peace) of the Charter have not been fully implemented. This has given rise to frequent recourse to Article 51 (right of individual or collective self-defence), which envisages a more regional type of collective security arrangement, more reminiscent of a traditional alliance system.

Because of weapons development, scientific and technological progress, and a greater awareness of our economic and ecological interdependence, however, there is a new awakening of universal collective security today. Moreover, as the International Conference on the Relationship between Disarmament and Development, held last year, made clear, security is multifaceted and cannot be defined only in terms of its military aspect. It has also become very evident that national security cannot be pursued in isolation from the security of other nations. I think it is now generally recognized that more arms do not bring greater security and very often it is just the opposite that results. The aim of the international community is to ensure a much greater degree of common security with many fewer arms.

David Hamburg

I want to focus on the possibilities for growing collaboration between the scientific community and the political community. From the beginning of the nuclear era, the scientific community has been deeply involved not only in creating weapons, but also in seeking ways to avoid their use. In arms control, crisis management and crisis prevention, scientists and scholars have played a major role in shaping ideas, testing them, refining them and disseminating them throughout the world. This activity has included a good deal of interplay between United States and Soviet scientists, among others. The time is now at hand to broaden the scope of such work, widen the range of participation, make the effort deeply interdisciplinary and international, and bring along a new generation of younger scholars. In the remainder of this century, there may emerge an historic opportunity calling for a new level of commitment by the scientific community, working with policy-makers, to reduce the great risks we now face. In other words, we need a continuing, long-term, dynamic interplay between the scientific community and the world of policy within both nations and international forums.

I would like to spend a few moments on United States/Soviet relations, since they are at the heart of the greatest danger. The competition between the super-Powers is obviously rooted in many forces of history, culture, values, ideology and geopolitics. But despite the basic competition, we can now see, over a span of more than four decades, that the two nations have in fact developed some patterns of restraint. Their relations are extraordinary when compared with relations among competitive great Powers in earlier periods of history. Let me state very briefly four of these patterns of behaviour that have emerged—even if vaguely formulated and largely implicit—in the actions of the two Governments:

1. Avoidance of direct assaults on the other nation's vital interests. Eastern Europe and Central America are examples.
2. Avoidance of direct confrontation between United States and Soviet military forces.
3. Avoidance of the use of nuclear weapons anywhere.
4. Observance of conventions of limited war, for example, limits on the uses and types of forces, and respect for sanctuaries.

So in effect, these prudent patterns reflect at least an implicit recognition of the unprecedented potential for slaughter that is now available. Could these patterns evolve further in more explicit and

dependable ways in the decades ahead? Could they come to cover major sectors of United States/Soviet interactions in ways that would, in due course, substantially improve relations between the two nations? That brings us to the question of whether there might be a truly fundamental change in United States/Soviet relations in the long run. What kind of guidelines might have practical value for leaders of both countries in the decades ahead? I make here a few suggestions in the hope of stimulating serious inquiry over a broad front in the scientific community, working co-operatively with policy-makers, I hope, yet fundamentally independent and non-ideological. The following represent guidelines for improvement in United States/Soviet relations applicable to the leaders of both nations:

1. There should be no dehumanisation, nor harsh depreciation of the other. Criticism should be in civil discourse; make carefully differentiated assessments rather than sweeping pronouncements.
2. Make ongoing efforts to relate principles of decent human relations to specific actions of the two countries.
3. Hold regular consultations at various levels, not only summits, but regional consultations on potential hot spots and meetings of foreign ministers or defence ministers and chiefs of staff on a regular basis.
4. Make agreements explicit. Build a cumulative series of crisis prevention agreements in this mode.
5. Do not put the other nation in a humiliating position, either directly or indirectly, in relation to its allies.
6. Resist the temptation to exploit local situations drastically.
7. Safeguard systematically and incessantly against inadvertent or accidental war. Here it may be that smugness and complacency are our worst enemies.
8. Do not sponsor terrorism against the other directly or through clients. View terrorism as a long-term danger to the relationship between the two countries; seek ways to co-operate in coping with terrorism.
9. Conduct ongoing serious negotiations on the central strategic balance. Try to build a cumulative record of arms control agreements that enhance stability, are verifiable, have rigorous compliance and greatly reduce the level of stockpiles. Such agreements must cover conventional as well as nuclear arms.

10. Avoid grandiose interpretations of national interest. Learn to live in a multi-centric or multi-polar world that accommodates many vigorous nations.
11. Expand contact widely in different spheres of activity and sectors of society. Leading edges might include scientific and scholarly exchanges, cultural exchanges and business transactions.

So much for a very condensed and perhaps cryptic set of guidelines' for United States and Soviet leaders. I think they are guidelines that would elicit broad consensus within the scientific and scholarly community.

I would like to speak just a moment on world-wide dangers and how we might learn to cope, because the dangers are by no means limited to the United States/Soviet relationship. In fact, the world is now as it has been for a long time, awash in a sea of ethnocentrism, prejudice and violent conflict. The world's wide historical record is full of hateful and destructive indulgences based on all sorts of distinctions: religious, racial, ethnic, political and many others. In fact, the human species seems to have a kind of virtuoso capacity to make distinctions which are harsh and depreciatory towards other groups. That's very old, but, of course, what is new is the destructive power of our weaponry—nuclear, enhanced conventional, chemical and biological. Moreover, there are some other factors that exacerbate the danger associated with the increased destructive power of the weapons. The worldwide spread of technical capability, the miniaturisation of weapons, the widely broadcast justifications for hatred and violence and the upsurge in fanatical behaviour are occurring in ways that can readily provide the stuff of very deadly conflicts in every nook and cranny of the Earth. To be blunt, we have, as a species, a rapidly growing capacity to make life everywhere absolutely miserable and disastrous.

Now in a world so full of hatred, repression, terrorism, small wars and preparations for immense wars, human conflict is a subject that deserves the most careful and searching inquiry. The stakes are now so high that there is an urgent need for co-operative work on these problems involving the physical, biological, behavioural and social sciences. Yet I regret to say that, outside the arms control field, human conflict does not seem to be a subject that has had high priority on many national agendas or that has commanded a leading position in many scientific societies. We in the scientific community really have

some reason for concern and regret. We have an incentive to accelerate our work on many aspects of human conflict and to make information that we now have and that will emerge available to policy-makers in the most attractive and convenient way possible.

Given the immense responsibilities of national leaders for managing human conflict, it seems to me that in the future they must have a deeper grasp of what the sciences have to offer on this subject. Leaders in many countries have laboriously informed themselves about weapons and the uses of weapons. Fine. But what about the rest of the problem? Is it inconceivable that the next three presidents of the United States and their counterparts in the Soviet Union could acquire a reasonably adequate grasp of the major factors that tend to create, exacerbate or alleviate deadly conflicts? If they concentrated on conflict resolution as deeply as they now concentrate on seeking and exercising power, could we come to terms with the greatest dangers?

The scientific community is probably the closest approximation we now have to a truly international community, sharing certain fundamental interests, values and standards, as well as curiosity about the nature of matter, life, behaviour and the universe. The shared quest for understanding is one that knows no national boundaries, has no inherent prejudices, no necessary ethnocentrism, and no intrinsic barriers to a free play of information and ideas. So to some extent the scientific community can provide a model for human relations, a model that might transcend the biases and dogmatisms that have torn the species apart throughout history and have recently become so much more dangerous.

Therefore, science can contribute to a better future by its ideals and its processes, as well as by the content of its research. All this needs to be brought to bear on the crucial problem of human conflict. In a fundamental way, the modern world is the creation of science and technology, in all its aspects—those we relish and those we fear. The time is right for the scientific community to provide world-wide leadership in addressing the ubiquity of prejudice, the profound and pervasive impact of ethnocentrism, and the greatly enhanced risks of these ancient orientations in the rapidly changing technological world of the new century.

Du Xiang-Wang

The title of my presentation is "Global Security and the Role of Science, Technology and Education". Global security has become a general concern of people throughout the world.

There are now 5 billion people living on this Earth and the number is still increasing rapidly, but we know that the earth will never grow bigger. Mankind has made this Earth his home for thousands of years and will live here in the foreseeable future. The human race is now confronted with a series of problems concerning survival and development. The problem for all the intellects of the age to consider is: How can we manage this home well? Historical facts have shown us time and again that neither world wars nor regional conflicts can benefit either side. Our limited resources and wealth and the wisdom of different peoples should be explored for economic development, not for war.

Global security and world peace is a lofty goal. To realize it, more and more sagacious statesmen, social activists and scientists all over the world are making concerted efforts. The great effort made by the Pugwash Conferences in these matters is praiseworthy.

Obviously it is not easy to realize this goal, as it involves many complicated problems: international politics, military technology, halting the arms race and promoting disarmament. In international relations, all countries should strictly abide by the principles of peaceful coexistence, and it is impermissible for them to interfere in the internal affairs of other countries or violate their sovereignty in any form or on any excuse.

As a scientist and educator, I would like to put forward two proposals concerning global security.

The development of new-tech and high-tech, the fruit of human wisdom and the treasure of mankind, should bring happiness to the people of the world. It will benefit mankind when it is used for peaceful purposes, but it will surely bring disaster when it is used for military purposes, and it will give rise to a new vicious cycle in the arms race. Scientists and engineers have important roles to play in preventing possible trouble in this regard. Therefore, my first proposal is that we develop international co-operation in the peaceful use of new-tech and high-tech research. This co-operation should include the exchange of research programmes and scholars and the setting up of international laboratories accessible to scientists all over the world. It is not impossible to engage in such a joint effort. The ITER (International Thermonuclear Experimental Reactor) research programme in which many countries are involved serves as a good example. What we have to do now is to try to extend this kind of co-operation to larger areas and to more countries. Such co-operation will certainly ensure the

development of new-tech and high-tech for peaceful purposes, be conducive to the exchange of science and technology and to mutual development, and promote co-operation between the North and South.

It will require the sustained efforts of several generations to realize the lofty goal of world peace and global security. Young people are the potential premiers, ministers, policy-makers and scientists. Therefore, it is very important to foster in the younger generation a high sense of responsibility for security and the development of mankind. The teaching materials for primary and high schools should be compiled with the purpose of cultivating the spirit of mutual respect, mutual understanding, mutual development and mutual help. The year 1986 was the International Year of Peace. There is a very popular song in China called "Let the World Be Filled with Love", which young people and adults like very much. We should try to encourage human love and co-operation among our young people so that this world will be filled with love, friendship and co-operation, rather than hegemonism, militarism and terrorism. Educators from different countries may make their contributions by evaluating teaching materials and by exchanging teaching methodologies and teaching experiences.

Here I would like to make my second proposal, a very concrete one: to introduce a 30-hour course in high schools called, "Global Environment and Human Development". One of its objectives would be to let young people know the serious problems facing the global environment, both natural and social: significant loss of world forests, loss of crop and grazing lands due to desertification and erosion, mismanagement and shortage of fresh water resources, air pollution and climate change, shortage of energy resources, diseases, poverty, rapid population growth and the danger of nuclear war. The other objective would be to let young people know the role that science and technology play in improving the global environment and promoting human development. Let them know that science and technology should contribute to the betterment of human conditions and civilisation.

Perhaps UNESCO or Pugwash Conferences could see to the compilation of the teaching materials for this new course. I believe that this course will infuse our younger generation with knowledge and a high sense of responsibility that will encourage them to devote themselves to building a better world for all mankind.

Mambillikalathil Menon

We all agree that peace is the central issue of our times. We have seen a steadily worsening situation since the Second World War: the

arms race of the super-Powers, nuclear missile command and control systems, the application of every new and conceivable technology to weapons, the establishment of a whole institutional framework that enables this to happen even in peacetime, and a vast increase in the quantity and sophistication of conventional weapons systems. What is even more horrifying is the manner in which these systems have been used so extensively. If we take our experience since the Second World War, what is clear is that all of the increase in expenditure on arms and the steady upward move in the spiral of new weapons and sophistication have not made any country or the world more secure. If that is so, then quite clearly, the only alternative is disarmament.

This fact has several basic implications. There is the whole area of building confidence and trust, especially in younger generations through education. It is absolutely vital that we regard all human beings on Earth as part of the same family and do not draw distinctions between them on the basis of religion, language, and the various other divisions that characterize us today. There is also the need for openness, which I shall not go into, but which we have discussed so extensively. We also must have structures, institutions and global security mechanisms that can prevent escalation. We are aware, moreover, that disarmament will release resources that ultimately can be used far more profitably for development.

Finally, whatever we say, we have to recognize that conflict—other than the insecurity of the type faced by the super-Powers—arises primarily through social injustice, perceived or real. Whatever we may do about removing the current weapons systems, conflict will recur if social injustice continues to exist. Let me conclude this part of my speech by observing that we certainly deal with many problems on a compartmentalized basis, but we cannot really deal with poverty, development, security, disarmament, ecology and pollution in isolation from each other. The situation calls for a holistic approach. That is what is ultimately needed.

We have had very extensive discussions on the range of weapons systems: nuclear, chemical, biological and a very large number of conventional weapons. Without question, however, nuclear weapons are the most urgent issue before us, and I do not think we can hesitate on that. The reasons are obvious. The consequences of any nuclear conflict are unimaginable and irreversible. There is, in a sense, a continuum from conventional weapons to nuclear weapons. The classic example of this is the European theatre, with battlefield or tactical

weapons. Through the recent Chernobyl and Challenger accidents, we have also been made aware of the extreme gravity of technology failures. In the nuclear era we cannot afford a risk in this regard.

I believe that many steps have to be taken in parallel to halt horizontal proliferation. Let me also make the point that a very gradual step-by-step approach will perhaps take too long and does not recognize the urgency which really exists in this matter. Certainly the INF Treaty represents a very historic beginning, but it still has to be ratified. Though we accept that it is only a beginning, it shows what can be done when there is political will behind the system. In this particular case, warheads have been decoupled from missiles in one class of nuclear weapons. In my view, the warheads must be eliminated. Furthermore, any such reductions in one category of weapons should not be used as justification for modernising existing nuclear weaponry in other categories and ultimately building more weapons.

During the period of the Geneva and Reykjavik summits in 1985 and 1986, it was increasingly agreed that nuclear war cannot be won and must never be fought. But I find that there is a tendency to return repeatedly to the concepts of deterrence and the need for nuclear weapons. This trend must certainly be resisted. There is a whole range of steps one can take; I will briefly mention a few of them. One could freeze all weapons at present levels—a zero cut, if you wish. One could then go to various levels of cuts, all the way to deep cuts. But what is most important is to stop the testing of nuclear weapons. Now there are three arguments always advanced with regard to testing: to keep the current weapons functioning, to develop new weapons, and to keep the weapons industry going. However, if one could stop the testing, the first and most important result would be that new weapons development would be slowed down and eliminated and the industries would have to do other things. These would be very clear steps towards an improved nuclear non-proliferation regime. We had a partial test-ban treaty in 1963. Twenty-five years later, we are still groping our way towards a comprehensive test-ban treaty.

Let us be really frank about how the problem of nuclear proliferation develops. You have two super-Powers, which show no signs whatsoever of really cutting their nuclear-weapon systems. China was a nuclear-weapon Power prior to the non-proliferation Treaty. It would say that it is in its interests to keep nuclear weapons. India is a large country with a long border with China: that immediately gives India an argument for having nuclear weapons (though in fact it does not have

any such system). Then take the rest of the subcontinent: the situation immediately suggests an argument for Pakistan to go nuclear. I don't have to trace the history of every place in the world, but quite clearly, one is dealing with something which starts at the top. I believe, therefore, that it's absolutely vital for clear, political statements to be made to the effect that nuclear weapons are unnecessary. That must be followed by a succession of steps which may take time, but which will demonstrate the world will move towards a non-nuclear-weapons regime. There is, of course, the area of new weapon technologies. One must say that new technologies are inevitable; we cannot stop technology development. Indeed, it would be undesirable, because so many elements in technology, particularly space technology and modern electronics, could be enormously useful for verification and peaceful uses. We have to ask ourselves: How does one prevent such technologies from actually finding their way into weapon-system design and then deployment? That is the stage we have to cut, not technological development *per se*.

Perhaps the most important single step in this regard would be to ensure that testing is really forbidden and stopped. Components of new weapons call for extensive testing. If one can agree beforehand that such items will not be tested, one can stop the development of the delivery vehicle and thus prevent the weapon from ever reaching its target. Therefore it is important to provide the United Nations with a technical structure which could assist the Advisory Board on Disarmament Studies. It would continuously assess all technological developments particularly from the viewpoint of how they could find their way into weapons systems. One could then consider what measures would be needed to prevent this, long before those systems were developed or likely to be developed. This is certainly something one should look at.

Since 1984, five continents have taken an initiative that relates principally to the nuclear area, to stopping testing and to providing the possibility for an integrated, multilateral verification framework within the United Nations. More attention must be given to this, because anything which is multilateral or under the United Nations could inspire confidence in the super-Powers and indeed in the world.

This Six-Nation Group has met in New Delhi, in Ixtapa, and in Stockholm. In connection with this aspect of verification, I'd like to read to you from their Stockholm Declaration, issued only a few months ago:

"... we recognize the need for the establishment of an integrated multilateral verification system within the United Nations, as an integral part of a strengthened multilateral framework required to ensure peace and security during the process of disarmament as well as in a nuclear-weapon-free world."

The Declaration goes on to other questions, which I believe are important if you are going to consider a global security system:

The total abolition of nuclear weapons, and the rapid movement towards that end, is a fundamental and moral imperative for humankind without qualification by reference to any other struggle for justice and development in the world. Even so, it is impossible to consider any questions relating to disarmament without being devoted to weapons of death and mass destruction. "The current instability in the world economy has deeply affected the poorest and most indebted countries. The arms race, particularly between the superpowers, greatly contributes to the worsening of the situation."

I would like to spend just a couple of minutes on the area of institutions for global security. So far we have functioned on the basis of national security arrangements. We will, over time, have to shift to global security arrangements. I personally believe that it is not a matter of constantly creating new institutions, but of making the institutions that exist work more effectively. The United Nations does exist today, and I do not think that we have any substitute for it. It has had many failures, but these failures are principally due to a lack of political will. The United Nations certainly must consider the possibility of a long-term international peace-keeping force and it must also try to relate activities to the real security needs of our age. In a certain sense, many of the predictions that were made when the Charter of the United Nations was drawn up, have now turned out to be wrong. For example, the emergence of new States from colonialism took place in less than three decades, though it was predicted that it would take eight. Technological changes that were totally unexpected when the Charter was formulated, have taken place.

The United Nations must operate under its Charter in a manner consistent with the technological age in which we live and the transformations taking place. When one talks of the United Nations functioning this way, one is not really talking of a world government, in any sense of the word. One is talking of a world order which everyone recognizes within the framework of their national governments. It is a world order of governments functioning on the basis of law. At the moment we have more discussion than actual functioning of this kind.

We have to convert a great deal of what is said in these halls into action.

To conclude, I will quote from a statement by Prime Minister Rajiv Gandhi, made at the last meeting of the Six-Nation Group in Stockholm:

"What we seek is not a marginal adjustment in the machinery of nuclear confrontation, nor a partial or temporary scaling down of the arms race. What we seek is an effective structure of international security. A structure that discards obsolete mind sets, dangerous delusions, and destructive strategic doctrines. Distant though the prospect of a nuclear-free world might seem, it is a prospect. We must start giving thought now to the international order we would like to see prevail in a world which is rid of nuclear weapons. We have to revert to first principles. The principles of nonviolence and tolerance, of compassion and understanding, of one world for one humanity. Coercion must give way to reason. Spheres of influence and special privileges must yield to a true democracy of nations. The cornering of the sources of weaponry must be transmuted into the sharing of the resources for global development. The pursuit of dominance must be replaced by coexistence and cooperation."

Virginia Gamba-Stonehouse

The subject I will broach is "Science and technology: views on their impact on global security". Much has been said and written on the relationship between science, technology and development. These views vary from the belief that developed countries have been continuously shifting their modes of domination over underdeveloped ones in response to changing conditions and to pressure from them to the belief that "science and technology are closely related to the emergence of underdevelopment and that, to some extent at least, they are contributing to the maintenance and persistence of underdevelopment".

I quote these views because it is so interesting to note that this approach clearly places science and technology as an issue of conflict in the world arena. A key to development and influence both in real and, perceptual terms, scientific and technological advance (not only in the field of weapons) has become an issue gradually forced to represent not a universal benefit to humanity, but a symbol of competition and pressure. However, by the same token, the potential of scientific and technological research and development is and can be the key to solving many of the problems of developed and less developed nations. The general question at this point seems to be, which is it to be? More importantly, does the evolution of science and technology represent an asset or a hindrance to global security?

Yesterday we saw that scientific and technological trends both open new challenges to the nuclear, conventional, and chemical and biological weapons capabilities of developed countries and offer new alternatives, for example, for monitoring and verification instruments. Science and technology have become important factors in relations between developed countries as well as in the relations between developed and underdeveloped countries. Technological progress has been credited with contributing more than any other factor to the economic growth of developed countries. Most underdeveloped countries, waging a losing battle through deterioration in terms of trade, have seen the technological content of their imports increase steadily. It is becoming more and more difficult for them to manufacture goods for export that can compete with products from countries with vastly superior scientific and technological capabilities. By the same token, the exploration and exploitation of resources in difficult terrain clearly favours those countries that possess the technology to do so.

It has often been said that a country which does not develop a scientific and technological capacity of its own will necessarily be technologically dependent and dominated by more advanced countries. Economic dependence and a lack of technological alternatives ensue. Taken at this level, the asymmetry in this relationship becomes a source of dissatisfaction, if not conflict, and thus influences negatively global security issues.

In the South, not surprisingly, much has been written recently on possible solutions to this problem. Most of this analysis calls for a major transformation in the structure of the world's scientific and technological effort requiring modification of the international division of labor, reorientation of scientific and technological activities, demonstration of the willingness of developed countries to check their own arms race, generation of local capabilities in underdeveloped countries, and incorporation of science and technology within the scope of development planning efforts.

But clearly, these solutions, though they aim to redress the relationship between science, technology and development, do not constitute a final blueprint for the removal of conflict inherent in North/South relationships, which would, in turn, lead to the enhancement of global security.

"Global security" means many different things to many different actors, depending on their ideologies, interests and capabilities. In its more abstract sense, perhaps, the interpretation that should be applied

to the term is an absence of conflict, that is, the attainment of a global balance conducive to peace. But since conflict emerges when two contradictory wills superimpose their desires on any one issue, it is difficult to assert that there will be no conflict or no clash of interests between two or more nation States at any given time. Nations are living entities that project their interests and needs. At one given time the interests and needs of one party will invariably clash with those of others.

The developing nations want more, and the developed countries want no less than what they have. This is reality. By the same token, in the realm of perception, countries are plagued by the belief that they must project the level of might they have attained and must influence others so as to demonstrate their relative power. Weapons technology and military procurement also fall in this category, as nations seek a measure of over-insurance. This game is played by all—those who have much, and those who have less but are still better off than some of their counterparts.

Science and technology have become keys to power and symbols of development and influence, and therefore they can be regarded both as a benefit and as a hindrance to the attainment of global security. It has often been pointed out that the underdeveloped nations, much as they insist that they are treated unfairly and are not allowed to develop their full capabilities and potential, are not barred from technological and scientific knowledge *per se*. Often the governing bodies in underdeveloped countries represent elites within their own societies that have access to education and knowledge at the global level. But the problem is not one of access to knowledge. Though the knowledge is there, what is really lacking to develop the capabilities required for development are the means to do so, be they economic or organisational.

What can one achieve with knowledge alone if the economic capabilities and possibilities of a given country do not allow for its exploitation and development? By the same token, even if economic means for development of this knowledge are obtained, what can one achieve in countries where there is no organisational infrastructure, no planning process, and no domestic stability to give coherence and constancy to the drive for development?

Having said this, however, I will add that for science and technology to work as a force for and not against a country, a third element must also be present. There must be a willingness in developed and developing countries to share and co-operate in paving the way for the

attainment of these capabilities by all. At the very least, there should be no conscious passive or active resistance to the less developed nations' attainment of such capabilities.

In issues of weapons technology and verification procedures, for example, there is room for co-operation between North and South. Witness efforts of the Group of Six to offer alternatives for verification in nuclear issues. By the same token, principles of limitation, containment and peace-keeping, if applied by developed nations, can set standards and examples elsewhere. In the past, examples have often been negative, making developing nations want to isolate their geographical areas from possible East/West confrontation.

Positive examples can also act as levers for constructive co-operation. But here we are dealing with the crux of the matter: Is it purely a lack of confidence? More than ever before countries have deep suspicions of the motives and interests of other nations. Perhaps this has to do with the different value systems that are represented in the community of nations and with the prevailing tendency to try to oversimplify strategy and policy. By generating models for action and behaviour, all nations relate to one another not merely on the basis of how they act, but on the basis of how others interpret what they want and how they think. In the age of massive and instant communications, it is a paradox that we have never understood each other less.

Crises seem to thrive on the fact that nations are willing to escalate behaviour and take risks in order to show their credibility and their resolve. There seems to be a need in today's world to over-insure. Probably as a result of the uncertainty in the international arena, countries wish to express their needs in a forceful manner that at times defeats their purpose. This is particularly true of weapons procurement and technology. This issue affects competitors, adversaries and allies alike. The fear of being defied by an opposing will inevitably leads to a demonstration of force that is sometimes justified publicly as enhancing deterrence and thus maintaining global security. This, of course, is not the case, as the only thing that is maintained is a false sense of a comfortable state of affairs for a number of countries at any one given time.

Now let us take the weapons development cycle to which we referred yesterday. It seems that the cycle is made up of a series of steps: scientific discovery, discovery of military application, decision to develop that application and emplacement or deployment. It seems that scientific discovery cannot be stopped and that military uses of these

discoveries ensue. But the decision to develop this capability can certainly be checked, since it is one of choice.

In a number of cases, the decision to explore and develop these military applications is made only through fear that an adversary has discovered the same thing and is preparing to use it against us. Countries develop a weapon as a means of studying how to neutralize it if it is used by an adversary. Insecurity and the desire to over-insure seem to be the cause for this. This phenomenon is seen and studied in the South, where developing nations search for over-insurance and alternatives, especially in the area of military procurement and technological advances.

The tragedy seems to be that nations feel the need to communicate more and more through military capabilities and action rather than through peaceful dialogue. These actions are more often than not of a violent nature, be they a threat to use force, increased military capabilities, or actual use of military power. Perhaps violent demonstration has become an adjunct to if not a replacement for communication. Perhaps it is a type of communication. In an insecure, suspicious world, perhaps demonstration and over-insurance have become the only viable forms of communication left, and thus in the third world much more effort is placed on trying to procure a capability than on analysing what that capability is needed for. In the same way, more is done to launch forceful actions that will generate a quick reaction than to negotiate peacefully.

Clearly, this does not work. It might work to stop conflagrations or to attract immediate attention and many times to pre-empt action, but it certainly does not work towards the removal of the sources of conflict that threaten global security. The call for openness in East/West relations must also apply to developing North/South communications.

The search for a minimum optimum method of communication that is mutually acceptable to all parties is indispensable. If we believe that global security refers only to the absence of war between the great Powers, we are missing the point. Global security is now inextricably tied to satisfaction and dissatisfaction and is coloured by lack of confidence and suspicion. Conversely, suspicion can be removed by positive and constructive co-operation at the international level, as is the case with the initiative of the Group of Six and with regional efforts such as we see in many different parts of the world. Confidence-building measures between North and South must be established.

Scientific and technological advances are today seen as keys to power and prestige. It is this fact which links them so closely to concepts of global security. But in this effort, countries—developed and developing—must assume full responsibility.

Developed nations must resist the temptation to award symbolic value to scientific and technological research and development, because this exacerbates their monopoly on knowledge. They should cooperate with developing nations in generating the capabilities that will permit the latter to explore their potential. Developing countries, in turn, should show the same generosity towards their counterparts and other, less developed, nations and they should attempt to lessen the possibility of conflicts by enhancing regional integration and co-operative initiatives. Developing countries should also strive to provide their countries with the organisational infrastructure, political stability and consistent planning that will make the scientific and technological knowledge useful.

Global security is a fragile concept. It represents different things to different parties. It is difficult to find a commonality of interests and values that will make communication and understanding possible. But perhaps if one issue at a time could be found to act as a symbolic bridge for communication, values could be drawn together. We know this from past experience. For example, humanitarian and relief action in times of catastrophe have drawn peoples together. If openness in scientific and technological issues could be made into a bridge between different value systems and different levels of development, a major source of North/South conflict would be removed, the weapon spiral checked, and global security enhanced.

DISCUSSION

Question

Do you see a role for the United Nations that would go beyond that of a primarily technical nature?

David Hamburg

One of the things the United Nations could do much more of would be to provide a variety of settings in which scientists and scholars, on the one hand, and policy-makers and policy advisers, on the other, could meet together on an equal footing and on a continuing basis to examine many different issues: arms control, economic development, environmental questions, fundamental conflict resolution, and so on.

There are very few nations that, to my knowledge, have effective ongoing mechanisms of this type. It seems to me the United Nations could address this on an international basis. There has been some very worthwhile improvisation of mechanisms of this kind between the United States and the Soviet Union, but the broader multilateral opportunities are still very great, the achievement very limited. The United Nations ought to look at its functions in this respect.

Serguei Kapitza

Today we have a highly efficient communications system, which we use for broadcasting football matches worldwide, but I think we could really rely on it to help develop the public's attitudes. This would be a long-term project, both for the educational system and for the media.

Heitor de Souza

I wish to say that I share the concern of Dr. Hamburg and those who have asked questions from the floor. The United Nations University was created to fulfill the objectives that are being discussed here. I hope we can achieve our goals.

Nikita Smidovich

I am from the Soviet Ministry for Foreign Affairs and deal with some verification issues, primarily regarding chemical weapons.

My remarks will be on the transition from traditional arms control to a new kind of arms control. First, it is clear that the military approach to global security is not enough in our day. If the military provided the only foundation for security, then military men, with perhaps a little help from diplomats, could cope with the task. But they have obviously failed in both bilateral and multilateral negotiations. The question of including scientists in policy-making reflects the growing complexity of the issue of global security. Do we need a new breed of scientists to deliberate on global security? I would like to point out that military men are ahead of scientists in that regard. Lately there has emerged a special breed of military men who deal specifically with military-political issues, at least in the General Staff of the Soviet Union. This is not the case with scientists.

Secondly, I would like to point out that traditional diplomacy has dealt with armaments separately. It has led to very specific requirements for verification and has confined verification to what is actually being negotiated. If you negotiate on medium-range missiles,

you verify only the specific facilities and specific weapons systems, but this is not what is needed in the context of global security. In the present transitional period, more and more negotiations are devoted to the inspection of what is called "undeclared sites". In the chemical weapons negotiations, there is the concept of challenge inspection, on which there is nearly consensus. Finally, arms control should not be viewed as only a negative or negating kind of activity; it should also offer some alternatives for more positive action.

Peter Deak

When we are talking about global security, we are always told that there are key prerequisites for progress, such as good political will and a good political atmosphere, but finally we always focus on military issues. There are three areas here. The first, the disarmament process, includes reductions, cessation of the development of high-technology weapons systems, nuclear-free zones, the restructuring of forces, and verification. The second area is confidence-building, first in the military sector and then in the political, economic, educational and scientific sector, and verification. The third area is in new political thinking and, as a consequence, new military thinking. These three areas are closely linked and interdependent. For example, the disarmament process involves both confidence-building measures and conceptual elements. In the global security approach, these three areas become even interdependent. I think that an international system of global security can only be elaborated within the United Nations Organisation.

Theodore Taylor

I want to point out three examples of problems that pose non-military threats and that are of concern to the whole world, but especially to the super-Powers. The first is the safe, permanent disposal of radioactive wastes produced in the course of making the nuclear weapons we are talking about and making nuclear power. The second example is the threat of global climatic change produced principally by the release of carbon dioxide. Eighty per cent of the world's coal is in the United States, the Soviet Union and China. These three countries need to work out what is to be done to avoid releasing that locked-up carbon as carbon dioxide. The third example is the pollution of fresh water, the result of the mixing of water that is already extremely poisonous with much larger bodies of water that are not yet contaminated. This is a problem that affects most countries in every continent in the world. Whatever happens in disarmament, the problems I have mentioned will need organized, global attention. The

co-operative work required to solve them will make the goal of general and complete disarmament much more realistic.

Makoto Momoi

I wish to make a few comments on the feasibility of establishing a free and open exchange of technological know-how between countries. First, Japan is often asked to extend technological and sometimes economic aid and co-operation to other countries. As a journalist with a Tokyo newspaper, I see lots of letters complaining that money comes out of the taxpayers' pockets and goes to countries that are producing highly sophisticated weapons systems. Secondly, there is a protectionist trend in Japan in high-tech areas, particularly among the young industrialists or scientists. Moreover, there is friction with the United States over high-tech issues. Unless and until we solve these problems, it will be very difficult for us to say yes to a free and open exchange of technical know-how with countries wanting these technologies.

Mambillikalathil Menon

I will briefly comment on the point made by Professor Taylor concerning global problems which should worry us. There are many areas where national boundaries are not respected, and the problems of climatic change and pollution take place over a very long time-frame, compared to the short time-frame in which elected Governments and leaders of individual countries operate. We need a great deal more basic scientific information in these areas. The International Council of Scientific Unions, which brings together all the scientific unions of the world, and covers many disciplines—mathematics, physics, chemistry, biology, nutrition, pharmacology, etc.—has now undertaken an international geosphere-biosphere programme, which deals with global change. So these major questions are being dealt with by the international scientific community. I think the United Nations has a role to play in this regard, because it is the place where all the countries come together and where they should look at the problems long before they become critical.

Yasushi Akashi

I would like to refer you to the Secretary-General's annual report to the General Assembly last year, in which he pointed out the need for the United Nations to be sensitive to the counsel of the best intellectual and scientific minds regarding solutions to the global problems that are not merely military or strategic. He is keenly aware

that the United Nations has to anticipate these problems before they become unmanageable and is considering what channels and forums could be utilized for that purpose.

Bhalchandra Udgaonkar

I want to make a couple of remarks regarding the dimension of science and technology in global security. Dr. Gamba-Stonehouse talked about the asymmetry between the North and the South and the need for our co-operative efforts to reduce it. I believe she said that the developing countries were not barred from access to science and technology *per se*, but I don't think this is correct. Some years ago, Pugwash worked on guidelines for scientific co-operation for development because developing countries felt that science and technology were being used as instruments of domination and that not much progress had taken place in making science accessible to them. The Pugwash guidelines were used in framing the Vienna programme of action adopted at the United Nations Conference on Science and Technology for Development in 1979, but that programme of action has failed to take off. A few months ago, I was talking to a distinguished scientist about the failure of the programme, and he remarked that it had never been expected to take off. There have been similar stalemates between the North and the South in other forums. I have good friends all over the world among the scientific community, but when it comes to technology with commercial aspects, I wonder to what extent one can say that science and scientists form an international community. We have to take into account the national interests that are involved in all these things. These are the realities of the situation in which we function, to which Dr. Momoi also made reference. I don't know what the solution to this is, but when we make various recommendations, we have to bear this in mind. This situation will have a very considerable bearing upon the developing countries' sense of security, in an era in which technology is used as an instrument of domination.

Virginia Gamba-Stonehouse

I have a few things to say about the questions that have been posed here. In my presentation I was trying to say that knowledge, being a universal thing, is not barred from individuals. I was not stressing so much the question whether we can or cannot have an exchange of information or knowledge, but the fact that it is futile to have knowledge *per se* unless the means are available to apply that knowledge to whatever objective we have in mind. I would now like to

refer to Professor Taylor's and Professor Menon's comments on global threats. Although we are all perfectly right in giving a lot of attention and care to these global environmental problems, often, in doing so, we demean the value of the human being. I will give a specific example. During the Malvinas/Falklands War in 1982, I received a communication from an international organisation requesting that care be taken not to affect the whales in the South Atlantic. Suddenly the value of just one soldier's life in the middle of some remote islands in the South Atlantic appeared to me to be demeaned. Our intention in discussing questions of disarmament, military procurement, and verification is to find ways to stop us from killing ourselves. In dealing with threats to global security, therefore, we should give equal weight to the threat that involves human beings and to the threat that involves the environment. I would also like to briefly address Professor Menon's statement about the need for the scientific community to aid Governments. I think the problem is much more serious: it is Governments' manipulation of scientific issues. There is deep distrust and resentment in the third world regarding scientific missions or scientific exchanges, because Governments have manipulated them in the past.

Marvin Goldberger

My comments are related to the remarks of a number of the speakers. First, the international scientific community is, in a sense, a superb model for world Governments. It functions because the thing that scientists most enjoy is talking about their work, exchanging ideas, and benefitting from the suggestions of others. At the same time, international economic competition is very real. If you accept the competition and you play the game, you play it as hard as you can. Secondly, we must somehow learn to deal with threats to the environment because they cannot be locally confined, as Ted has so eloquently pointed out. When we worry about the destruction of the rain forests, we cannot lose sight of the fact that the livelihood of people who live in those areas depends upon destroying those rain forests. We face a lot of similar problems in the arms control area, when we attempt to convert industries from military to civilian production. Thirdly, I believe the way to remove the North-South disparity in technological capabilities is to have a highly trained, technically solvent group of people in the South. The United States ought to supply funds to bring students from Latin America to study in this country. They will make their own way once they have the

intellectual tools and the opportunity. Finally, we spend an inordinate amount of time worrying about the fact that the Soviet Union and the United States have together 50,000 strategic nuclear warheads divided. That is a very serious problem, but sometimes I think we tend to overemphasize it. Although the outcome of their use would be unspeakable, the probability of their use is smaller than we sometimes want to take into account. Maybe if we talked more about global environmental threats, the others would fall into proper perspective.

Serguei Kapitza

I have a very short remark to make on what Marvin just said about those 50,000 weapons. Why did we build them up? That is a question that is not answered, you see, even if we stop talking about it.

Luiz Carlos de Menezes

I would like to propose that this Pugwash Symposium recommend that a group of scientists indicated by Pugwash and/or other scientific international societies have periodic meetings and continue their studies of global security and associated subjects. Such meetings should be organized and conducted by the United Nations University. There would be no need to create new mechanisms. A political decision would be enough, and a recommendation from Pugwash could help to make this political decision possible. I would welcome comments from Professor Menon and Professor de Souza on the feasibility of such continuous studies and meetings.

Mambillikalathil Menon

I certainly believe that such studies are valuable. I suggest that technological advances be noted, as well as their implications for various types of defence equipment and weapons systems so that one can even say that these are likely to appear in weapon systems five or ten years from now. One should also study what can be done to prevent that from taking place. If the United Nations University is going to play a role in conducting independent, objective and analytical studies relating to these issues, then it must be able to cover all aspects of the present situation: the sociological aspects, the growth of fundamentalism, all the various ways in which society is being fragmented and compartmentalized today, ways in which to remove suspicion, the educational processes, the role of the media, technology, verification and so on.

William Epstein

There is no real shortage of brilliant ideas and of eminently sound proposals. The problem has always been how to implement them. But, scientists propose and Governments dispose. How do we get these ideas out? We have to reach out to the public. Only public opinion can force Governments to take the right action. The United Nations must acquire its own television station. I think that if we could make some suggestions here as to how to get the information out to the public, that would be one of the most important things that could emerge from this Symposium.

Francesco Calogero

I would like to comment on the topic that the previous speaker so convincingly talked about. This morning David Hamburg spoke about the need for a new generation of scholars. The point is that scientists who were born after the war know very little about strategic issues. The need for interdisciplinary courses in universities is very great, because we must have scientists who understand the technical and the strategic components of these problems. We cannot keep relying upon the previous generation. We ourselves have to do something. Is it within the mandate of the United Nations University to give interdisciplinary courses in these matters?

Yasushi Akashi

The United Nations University is not a traditional type of university which gives courses. It is a global network of research institutes and scholars, bringing their expertise to bear on pressing issues of peace and human welfare. I also want to intervene briefly in reaction to Bill Epstein's remarks. I very much agree with him that it is not a lack of positive ideas, but the means to implement them, which is the issue. However, as former head of the Department of Public Information, I am afraid that neither Governments nor private channels of communication, which are now the main communicators to their public, would concede to a supranational or intergovernmental organisation such as the United Nations, at the present time, and perhaps for the foreseeable future. I think we have to be realistic about how to communicate, and we always have to have our feet on the ground in discussing these matters.

William Epstein

I know the problems that Akashi and other Under-Secretaries-General have had in trying to improve communications by and on

behalf of the United Nations. We can only overcome that if we find some way for scientists, educators, and NGOs to reach out to the public. You can change governmental opinion. I think that we should devote a little more time to talking about how we can get Governments to change their minds so that they will be able to implement these good ideas.

Martin Kaplan

We have already heard many of these arguments, complaints and recommendations about the United Nations and what it can and cannot do. I merely wish to warn against overburdening the Organisation's agencies. Moreover, it is very hard to see how certain departments of the United Nations could provide independent analyses and scientific opinion, because their experts are chosen by Governments. I would also like to ask Virginia Gamba-Stonehouse if she has any specific recommendations for overcoming the difficulties in the North-South situation that she has analysed so well.

Virginia Gamba-Stonehouse

I believe that both the developing and the developed countries are responsible for development and for our dream for mankind. I'll start with the developing nations. Improvement in infrastructure, organisation, development planning and domestic stability, so that efforts to apply science and technology can be fruitful, should consist of the following steps:

First, it is my experience that the lack of institutionalisation in very many third world countries militates against any achievement of political objectives. Interagency communications within the governmental structures must be strengthened. Those countries that don't have a professional civil service should generate it. If you reinforce the institutions, then frequent political changes at the top would not necessarily destabilize the entire system.

In the second place, communication between governmental and non-governmental institutions must be improved. A lot of third world countries do not have the tradition of strong NGOs. NGOs can really help in consolidating civic participation and educating citizens, from primary education through university, about their responsibilities as well as their rights. So civic participation, NGO formation and the channels to remove Governments' suspicions of NGOs are needed.

Thirdly, there is a need for measures to restore confidence in the people of a nation. We in third world countries have been fighting

terrible conflicts within ourselves: we have problems of terrorism, military repression, and deep mistrust that are eroding the basis of our societies. In the fourth place, I think it's vital for Latin America to improve civil-military relations through confidence-building and communications. We want to take political power away from the military elites and give them a legal military role, but first we have to create civilian experts on defence. Once we have carried out these steps, we can go to medium and long-term planning. Nowadays, for the first time, Latin America wishes to depoliticize its future, to become more technically oriented and pragmatic and to be less nationalistic. However, the developed nations' perception of the pattern of behaviour of the developing countries is retained despite what those countries try to do to change it. They continue to believe that the developing countries' pattern of behaviour is irrational, and that the only way you can deal with an irrational adversary is to increase your threat to him to make him behave. At this point, I would try to change the pattern of behaviour and the perceptions of the North by informing and educating the people of the developed nations about the changes that are occurring in the third world. I would really focus on the media, and I think scientists should not allow irresponsible or outdated journalistic information to be published, especially through international agencies.

Francesco Calogero

Pugwash will certainly be very willing to collaborate with the United Nations University and the United Nations in trying to mobilize the scientific community to tackle the global problems that are before us.

Joseph Rotblat

I would like to reply to Professor Goldberger's last point, which I feel should not be left unchallenged. He suggested that if we try to ignore 50,000 nuclear warheads that exist in the world, the problem will go away. I don't think so. The 50,000 nuclear warheads are irrational, of course, but there is some method to this madness. They have been accumulating gradually over the years, and the arms race will go on. There is likely to be a fair acceleration of the arms race if SDI goes ahead. Even if there are no further weapons developments, there is the possibility that the weapons will be used somehow by accident. We also ignore the fact that other nations that don't have nuclear weapons now will say that they must also have them. This is a topic that we have to keep on the agenda all the time.

Catherine Kelleher

Very little effort has been made to develop the kind of relationship between younger scholars and policy-makers that is really required. In Student Pugwash there are activities, study groups and conferences on particular issues, and this has also been true in a number of centres in the United States, Western Europe, the Soviet Union and other areas. What is lacking now is a set of incentives that reward these younger scholars with chances to come together to establish their own networks and to encourage them to believe that they are the successor generation. It may well take a concerted set of measures, which would involve some of us—slightly older than 21—stepping out of the way, or including our younger colleagues in activities such as this one, where they could not only learn, but be given the opportunity to take on the tasks that will be theirs tomorrow.

Richard Garwin

On this question of networks and involvement of other people, I wish to point out that there will be a videotape of this session, and I think it should be advertised and made available in other countries. The European academic institutions have been linked for some years now by a computer academic research net with similar computer networks in the United States. One should extend this facility to the Soviet Union and to China, where it does not yet function. It is really a lot easier to do joint authorship and alert one's colleagues via the computer net than by ordinary mail, and it's cheaper, too.

Heitor de Souza

The United Nations University was created by the General Assembly to deal with research, postgraduate training and the dissemination of knowledge. It's not a governmental body; it's a scholarly, scientific enterprise, and I wish we could make better use of it. We have ideas, but we need resources. For instance, the two super powers have not yet contributed to the University. We really have to anticipate the problems of the future. That's what we hope to do in the United Nations University. The United Nations University is already trying to put together a human response to a programme for global change. We are going to have a meeting in September in Tokyo to start addressing this issue, together with the International Social Scientists Council, UNESCO and other agencies. I like very much Professor Goldberger's idea of a programme of study in all the developed countries to provide opportunities for fellows from developing countries,

but we don't want any more "brain drain". I would hope that at the end of the symposium, if you have a suggestion, the United Nations University will be able to respond. We are available. It's just a matter of deciding what to do and providing the means to do it.

Yasushi Akashi

I'd like to join Dr. de Souza in expressing gratitude to all of you for a most fruitful and stimulating discussion. I think this opportunity of hearing independent, scientific views has been extremely useful to us in the United Nations Secretariat, and equally beneficial to the delegations of Governments present here and to the representatives of the mass media and non-governmental organisations. The beauty of this kind of encounter lies precisely in its spontaneous character, and we see the great use which can be made of this type of forum in the future.

SUMMARY

John Holdren

The three topics of our day and a half of discussions were as diverse and multi-faceted as the interests of the three sponsoring organisations. My task as summarizer of these discussions is not simply to give a synopsis of what has been said, but also to indicate how these topics are related to one another.

The most obvious relationship is that achieving global security is the overarching goal that brings us together, while limiting the development of new weapons and verifying arms control agreements are two important sub-elements of the global-security problem. These two sub-elements share the characteristic of having substantial scientific/technological components, which should be no surprise in the agenda of a meeting organized by Pugwash. The Pugwash Conferences, after all, have been concerned since their inception more than thirty years ago with the two-sided relationship between science and technology and the prospects for global security. On the one hand, what has been the role of science and technology in generating threats to global security? On the other, what could and should be the role of science and technology in bringing progress toward global security?

Beyond this theme of the roles of science and technology, which runs through all the topics on our agenda, and beyond the other substantive links among these topics (which I will discuss in a moment), all the problems we have been discussing have some structural similarities that are worth mentioning.

1. The international dimensions of the causes and consequences of all these problems imply the necessity of international co-operation in their analysis and solution;
2. All these problems are characterized by strong interactions among their technological, military, and political aspects, which imply that the corresponding analysis and conclusions must be strongly interdisciplinary;
3. There is an intertwining of problems of nuclear, conventional and chemical weaponry; of the East/West and North/South dimensions of these issues; of military and non-military threats to human well-being; and of causes and effects through feedback of one problem upon another and vice versa. This intertwining means that analysis of these problems must be integrative: it is usually not practical or productive to try to determine what part of the problem is most important or what part of the cause is most fundamental in order to focus mainly on that piece. It is better to focus on how the pieces interact. Just as the analysis must be integrative, moreover, the solutions must be comprehensive: it is almost always necessary to treat several issues at once. On a positive note, experience shows that sometimes it is actually easier to solve several problems at once than to solve one problem at a time;
4. In addition to the need for approaches to these problems to be international, interdisciplinary, and integrative, there is a need for imagination and daring in shaping solutions whose scope and speed are commensurate with the magnitude of the dangers we face. If we persist in thinking that only a gradual, step-by-tiny-step approach is feasible, we will simply be overrun by the rapidly growing complex of problems that threaten global security.

Let me now illustrate these general characteristics of our predicament by reference to some of the specific problems we have been discussing at this symposium.

Concerning the interaction of technical, military, and political dimensions of these issues, there is no better illustration than the dynamics of the nuclear-arms race itself. We know that the nuclear-arms race is: rooted in the political and ideological confrontation between East and West; motivated by the natural tendency of military people to prefer military superiority if possible and to insist in any case on no less than parity; fuelled by expanding technological

possibilities brought about by the irrepressible ingenuity of weapons scientists and engineers; assisted by aspects of electoral and bureaucratic politics that reward fear-mongering and the building of powerful military/industrial institutions; and aggravated by worst-case assessment, the fallacy of the last move, and the action-reaction syndrome.

Concerning our topic of new weapons development, this perspective tells us that the role of "weaponeers" themselves is important, but not dominant. The "technological imperative"—the idea that what can be built probably will be built—is partly the result of the characteristics of scientists and engineers, and also partly the result of political and military pressures rooted in the suspicion and mistrust inherent in an adversarial relationship. Certainly we must try to manage and constrain the creative impulses of weapons scientists and engineers by analysing critically where prospective new weapons developments will take us. What obvious and not-so-obvious dangers may result, including what will happen after the new developments have been duplicated on all sides? At the same time, however, we must also address the roots of the arms race in the adversarial, zero-sum approach to security that has been the norm in international relations for centuries. We must, in other words, work to propagate the "common security" approach, based on the insight that no country can succeed in increasing its security by means that diminish the security of other countries.

Two specific ingredients of the common-security approach received particular attention at our symposium. One is to adopt on all sides a new spirit of flexibility in solving disputes about compliance with arms-control agreements, viewing the task of solving such disputes as an essential, co-operative venture, rather than pursuing (in the words of one of our participants) a set of rigid and self-serving treaty interpretations as just one more form of competition. The second ingredient is building common security through co-operative efforts to cope with the common problems that (in the words of another participant) may destroy us even if nuclear war does not. These problems include hunger, disease, poverty, illiteracy and the erosion of the environmental underpinnings of human well-being. Viewed more positively, these common problems can be described as the challenges of developing sustainable agriculture, an environmentally tolerable energy supply, functional health-care delivery systems, the innovative use of communication and information technologies for education, and so on. These challenges, of course, represent a tremendous latent

demand for scientific, technological, and financial resources now being squandered in the military sphere.

Illustrating the characteristic of intertwining of global-security problems and the consequent need for comprehensive solutions, our discussions have underlined in my mind the interaction of the nuclear, chemical, and conventional forces issues in both their East/West and North/South dimensions. As I see it, for example:

1. We will not solve the problem of proliferation of nuclear weapons unless and until the existing nuclear-weapon powers stop behaving as if these weapons were the centre-pieces of their foreign policies, the most valuable currency of international power, and among other functions an appropriate counter to conventional threats. The most obvious and plausible signal of such a change in the attitudes of the nuclear-weapons powers, of course, would be their agreement on a comprehensive ban on the testing of nuclear weapons. This needs to be a really comprehensive ban, and not just a reduction in the numbers or permissible yields of tests, since otherwise it will be interpreted as merely modifying the rules of the game in a way that permits the major players to keep playing. Only a truly comprehensive ban, reflecting an admission that nuclear weapons have no function for which their design needs continuing refinement, will gain the needed benefits both in stifling weapons development and in reducing proliferation incentives;
2. We will not see an end to the use of chemical weapons in conflicts in the South unless and until there is a worldwide rejection of these weapons, embodied in a comprehensive ban on their production, stockpiling, and use, reflecting a consensus that these weapons of mass destruction and all weapons of mass destruction are unusable and wholly intolerable as instruments of national policy;
3. We will not solve either nuclear or chemical weapons problems unless and until we can pull the teeth out of threatening conventional force postures, which serve as excuses for possession of nuclear and chemical weapons as deterrents against conventional attack;
4. We will not accomplish the reduction and restructuring of conventional forces into more strictly defensive postures, as needed to fundamentally alter the threatening and destabilising characteristics of the East/West conventional confrontation, until East and West alike stop regarding the South as an arena

- of major-Power competition (requiring the maintenance of force-projection capabilities that are inconsistent with defensive restructuring of conventional forces) and as a market and dumping-ground for surplus weapons-production capacity in the North;
5. We will not find the technological and financial resources to tackle the problems of health, energy, environment and development discussed here as long as the world continues to spend a trillion dollars per year on armaments; and we will not save a significant fraction of that sum unless we drastically alter not only the nuclear and chemical force confrontations (which are dangerous but relatively cheap), but also the conventional force confrontation (which is dangerous and expensive).

Concerning our other major topic, verification of arms-control agreements, our discussions have emphasized the tremendous potential for scientific and technological innovation in verification techniques to facilitate verification of the further arms control agreements that are so badly needed. But it has also been emphasized here that these technical aspects of verification are subordinate to the process of achieving political consensus on what the arms control agreements are trying to accomplish and on what would constitute a militarily significant violation. There is even a danger that the mirage of technical capabilities for verifying every detail of arms reductions might divert us from real progress in arms control by promoting the idea that we need to verify every detail. In reality, no agreement can be perfectly verified or needs to be. The point is that we must compare the risks of imperfect verification, which can be made very small, with the risks of waiting for perfect verification before making any agreement at all, which would be foolish and very dangerous indeed.

Of course there have been many other important points made in our symposium that I could not mention in this brief summary. I could only provide here a necessarily personal perspective on our main themes.

ANNEX

Symposium Participants

Dr. Jurgen Altmann, Peace Research Institute, Frankfurt, Federal Republic of Germany

Professor Charles B. Archambeau, University of Colorado, United States

Professor McGeorge Bundy, Former National Security Advisor, United States

- Professor Francesco Calogero, University of Rome, Italy
Colonel Dr. Peter Deak, Ministry of Defence, Hungary
Gloria C. Duffy, Global Outlook, California, United States
Professor Du Xiang-Wang, Deputy-Director, Institute of Applied Physics and Computational Mathematics, Beijing, China
Professor Bernard T. Feld, Professor of Physics, Massachusetts Institute of Technology, United States
Dr. Steve Fetter, Center for International Studies, Massachusetts Institute of Technology, United States
Professor Virginia Gamba-Stonehouse, Institute of Strategic Studies, Buenos Aires, Argentina
Dr. Richard L. Garwin, International Business Machines, New York, United States
Dr. Marvin L. Goldberger, Institute for Advanced Study, Princeton University, United States
Professor Lameck Goma, Minister of Higher Education, Zambia
Professor David Hamburg, President, Carnegie Corporation, New York, United States
Professor John P. Holdren, Center for International Studies, Massachusetts Institute of Technology, United States
Professor Serguei Kapitza, Institute for Physical Problems, Moscow, Soviet Union
Dr. Martin M. Kaplan, Secretary-General, Pugwash, Switzerland
Professor Catherine Kelleher, University of Maryland, United States
Ambassador Miljan Komatina, Secretary-General of the Conference on Disarmament, Geneva, Switzerland
Professor Joshua Lederberg, Nobel Laureate, President, Rockefeller University, New York, United States
Professor Dr. Karlheinz Lohs, Research Centre for Chemical Toxicology of the Academy of Sciences, Leipzig, German Democratic Republic
Professor Luiz Carlos de Menezes, Vice-Rector, University of Sao Paulo, Brazil
Professor Mambillikalathil Menon, Chairman, Planning Commission, New Delhi, India
Professor Makoto Momoi, Guest Commentator, Yomiuri Newspapers, Tokyo, Japan
Dr. Milo Nordyke, Lawrence Livermore National Laboratory, California, United States
Professor Julian P. Perry Robinson, Science Policy Research Unit, University of Sussex, United Kingdom
Emeritus Professor Joseph Rotblat, University of London, United Kingdom
Professor Lawrence Scheinman, Peace Studies Programme, Cornell University, Ithaca, United States
Dr. O. Shepeleva, MIR Publications, Scientific American (Russian Edition), Moscow, Soviet Union
Nikita Smidovich, Second Secretary of Ministry of Foreign Affairs, Nuclear Weapons, Moscow, Soviet Union

Professor Heitor G. de Souza, Rector, United Nations University, Japan

Professor Theodore B. Taylor, Adviser on Nuclear Weapons, West Clarksville,
New York, United States

Professor Bhalchandra M. Udgaonkar, Tata Institute of Fundamental Research,
Mumbai, India

Professor A. A. Vasiliev, Institute for USA/Canada Studies, Moscow, USSR.

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New Technologies and the Search for Security: Prospects for a Post-Cold-War Era

Survey off Recent Trends and their Implication

This is a time of historic change in the world, a time when the political and economic structures within many countries are being transformed and the nature of relations between countries is evolving in ways that could not possibly have been imagined even a few years ago. Czechoslovak President Vaclav Havel, in a speech before the United States Congress on 21 February 1990, called these changes "irreversible", and said

"These revolutionary changes will enable us to escape from the... bipolar view of the world, and to enter at last into an era of multipolarity... in which all of us—large and small—former slaves and former masters—will be able to create what your great President Lincoln called 'the family of man'."

In the minds of many, the international community has now entered the so-called "post-Cold War period". While the precise character of this new era in global affairs remains unclear, the general outlines of a new world order are at least beginning to take shape.

Those outlines suggest that new developments in science and technology, which have in the past sparked new generations of offensive and defensive military systems and increased levels of military spending, will have a declining significance in regard to national security problems of a military nature. The use or threat of force in order to resolve a conflict at any level, from that of the super-Powers to regional or community levels, seems to have decreasing credibility. Science and technology will, however, play an increasing role in

responding to both global economic and environmental concerns. These two components of international security—economic security on the one hand and environmental security on the other—will become more and more interconnected. Given the limited resources of our planet, economic growth—much of which is tied to advances in science and technology—will need to be viewed increasingly in terms of whether it is environmentally sustainable as well as economically beneficial.

For the past forty years, the ideological and military confrontation between the United States of America and the Soviet Union has been the most constant, powerful and mobilising force in world affairs. Seen in absolute terms of “good versus evil”—with both sides claiming to represent the good in this equation—the organisation of their societies was in many ways a rather simple task of maximising investments in defence programmes, expanding the global scope of their military alliances, and seeking every opportunity available to achieve geopolitical advantages for each over the other.

In this context, *developments in military science and technology* have been a central preoccupation of both societies. Each new development—from the hydrogen bomb to the intercontinental ballistic missile to the photo-reconnaissance satellite to the nuclear submarine—has been seen as a breakthrough by one side and a challenge to be matched by the other. Both nations have devoted an enormous amount of their most valuable human and material resources to making sure that they kept pace with each other in this ongoing military confrontation.

That confrontation, fortunately, never produced the catastrophe of a third world war, but neither did it produce any meaningful security. Proxy wars between third world surrogates became common. Nuclear arsenals of incalculable destructive power cast a pall of fear over all the countries of the Earth. In addition, the trillions of dollars invested in the creation and maintenance of these opposing military establishments stunted the economic development of much of the world. It now appears, however, that this competition has largely run its course. Both nations seem to have realized the futility of this competition, and are seeking more realistic ways to achieve national security and to protect national power.

The revolutionary developments that have taken place in the Soviet Union and Eastern Europe over the past year have now put the super-Power relationship on entirely new terrain. Military disengagement, economic interaction, and political dialogue have become the central

focus of attention between the Eastern and Western blocs—if one can still refer to them as “blocs”. Barring any unforeseen change of direction in United States-Soviet relations, it seems clear that concern about the threat of nuclear war will diminish even further, as will support for large investments in defence programmes.

In the Soviet Union, as in the United States, the public feels that too much money has been going into defence programmes while not enough has been devoted to domestic priorities. A recent opinion poll in the United States showed that 63 per cent of Americans feel that they are spending too much on defence, while more than 50 per cent feel that the Soviet Union is now simply a minor threat to the United States, or essentially no threat at all.

In contrast, nearly 80 per cent of the American public feels that environmental pollution has become a major hazard and that considerably more money needs to be spent to tackle that problem. Similarly, environmental problems are now among the greatest national concerns in the Soviet Union, Eastern Europe, and around the globe.

While there remains no match for the destructive capacity of a nuclear bomb, the risk posed by nuclear weapons seems increasingly manageable, while the risks posed by problems such as depletion of the Earth's ozone layer, population growth, global climate change, and widespread global pollution seem increasingly unmanageable. Seen another way, while it is becoming easier to envision 40 or 60 years going by without another nuclear weapon being detonated on a civilian population, it is becoming increasingly difficult to envision that same time passing without millions of people being adversely affected by global environmental problems. *Environmental security* is thus emerging as an important new element of people's understanding of the human condition. In Eastern Europe, where acid rain has devastated entire forests; in the United States, where tens of thousands of toxic waste dumps await clean-up; and in South America, where tropical rain forests are being cut down at the rate of an area equal to a football field every second, it has become clear that human activity is taking a heavy toll on the environment. If the health of our planet continues to deteriorate, so too will that of its inhabitants.

Most of the major environmental problems of the world can be tied to economic activity, which itself is a vital—if not the most fundamental—component of individual, national and international security. Any discussion of the conditions necessary for achieving peace and security in the world must not focus simply on the major question

whether individual nations feel secure against military threats from others, but must also consider the developments necessary to make the inhabitants of those nations feel economically secure.

An estimated 1.2 billion people—nearly one-fourth of the world's population—currently live in a state of dire *poverty*. For these people, the number of nuclear weapons in the world is irrelevant. For them, the most important security concerns revolve around obtaining enough food and water to stay alive and to avoid infectious diseases. The overwhelming majority of the world's poor are illiterate, and thus have no access to outside information or ideas.

Nearly half of the world's population has not benefited at all from the fruits of even the most basic developments in science and technology. Yet herein lies one of the most vexing security problems of our times. The people of the world's developing nations have the same aspirations for economic growth, increased mobility, higher standards of living, and longer lifespans as do the peoples of the industrial world, but our planet cannot handle 8 billion people (which is the expected population 40 years from now) generating carbon dioxide, acid rain, toxic wastes, and municipal garbage at rates characteristic of the industrially developed world.

The issue of *global climate change* serves as a poignant illustration of the potential problem if developing nations follow the same economic path as was forged by today's industrial societies. The United States Environmental Protection Agency has estimated that to stabilize atmospheric concentrations of carbon dioxide—and thus diminish the prospect of an increase of 2° to 6° C in the Earth's temperature during the next century—global carbon emissions must be cut by 50 to 80 per cent, to levels of the 1950s. This compares with estimates that economic progress in the developing nations—involving increased combustion of fossil fuels in transportation and industrial activity in all of its forms—could result in a 50 to 70 per cent increase in global carbon emissions during the next 20 years.

It will be no easy task to develop economic strategies that meet the needs of those striving for a better quality of life today while not at the same time planting the seeds of a substantially diminished quality of life for future generations. Fundamentally, we will need to develop strategies for sustainable economic development. Both in our application of existing technologies and in our creation of new technologies we must engage in a process of technology assessment that will ensure that we attain the sort of sustainable development that is now called for.

The role of science and technology in contributing to international peace and security can be looked at in terms of both *the creation of technologies* and *the distribution of technology*.

Creation of New Technologies

Developments in science and technology will be essential if we hope to escape from the environmentally destructive treadmill on which the industrialized nations have been stepping for the past 200 years.

To curb the risk of *global climate change* we need to reduce drastically the release of carbon into the atmosphere. This can be achieved through advances in energy efficiency and through increased development of alternative energy sources. Major increases in efficiency have been demonstrated by European and Japanese automobile manufacturers, who have developed prototype four-passenger vehicles that get over 70 miles per gallon of gasoline, compared to an average of 20 miles per gallon for the average American car today. Alternative energy sources, such as electric- or hydrogen-powered vehicles, would provide a major contribution in helping reduce the combustion of fossil fuels. Much more revolutionary would be the development of mass transportation systems based on advances in superconductivity, which would provide unheralded improvements in energy efficiency, not only in the field of transportation, but throughout society.

Thanks to research and development, new generations of appliances, lighting systems, manufacturing methods, and construction designs will use a fraction of the energy consumed by today's models. Advances in solar, wind, hydrogen, geothermal, fusion and other energy technologies could bring drastic reductions in the combustion of fossil fuels.

Developments in *biotechnology* could be enormously beneficial in agriculture and in helping tackle the problem of world hunger. Genetic engineering could lead to crops with greater drought resistance, improved nitrogen fixation, salt tolerance, and resistance to pests and disease. Genetically altered bacteria that help clean up oil spills have already been developed. Awaiting us in the more distant future might be bio-engineered organisms that digest sewage, turning it into usable fluids.

Developing *substitutes for chlorofluorocarbons* (CFCs) will be enormously important if we hope to prevent further degradation of the Earth's ozone layer. The IBM Corporation announced recently that it had developed techniques which reduced by 80 per cent the amount of

CFCs released during the process of cleaning semiconductors. The DuPont Chemical Company has announced progress on the development of a CFC substitute for refrigerators and air-conditioners.

In *the military arena*, while it appears that the development of new generations of offensive and defensive weapons will decline, it appears that developments in *verification technologies* are making it increasingly feasible to negotiate sharp reductions in essentially all of the most dangerous military systems generated by the United States-Soviet arms race. As a specific example, a group of scientists associated with the Argonne and Lawrence Livermore National Laboratories in the United States are reasonably confident that during the next few years they will develop ground-based monitoring devices that could be used to verify a treaty which places strict limitations on the testing or development of high-power lasers for anti-satellite or anti-ballistic-missile applications. Detection of laser firings is something that we have been told for years could not be done, but through the use of sensors that detect the light reflected off atmospheric aerosols during tests of high-power lasers, we may now be able to tackle that problem.

There are also many other scientific and technological developments that could bring revolutionary changes in the national security environment. It is important to caution, however, that we should not fall into the trap of thinking that new developments in science and technology will deliver salvation from the many economic, environmental and military problems facing the people of this planet and endangering their security. They will not. Indeed, one can argue that better distribution and application of existing technologies among the nations of the world might have a greater impact on global security than will any of the new technical developments.

To quote again from President Havel, a non-scientist intellectual:

"We are still a long way from that family of man; in fact, we seem to be receding from that ideal rather than drawing closer to it....we are still destroying the planet that was entrusted to us, and its environment. We still close our eyes to the growing social, ethnic and cultural conflicts in the world.... In other words, we still don't know how to put morality ahead of politics, science and economics. We are still incapable of understanding that the only genuine backbone of all our actions—if they are to be moral—is responsibility."

The Distribution of Technology

The 747 jet plane and the "bullet train", now taken for granted in much of the world, are light-years away in technical sophistication

from the instruments of everyday life for more than a billion people on this planet. For those who live in abject poverty, food, water and personal health are urgent security concerns.

At the present time, some 40,000 infants die in the developing world each day as the result of severe nutritional stress and infectious disease. Seven out of ten new-born babies in Mexico City have lead concentrations in their blood that exceed World Health Organisation standards. World wide, more than two billion people drink and bathe in water contaminated with parasites and pathogens, which explains in part why life expectancies are actually dropping in many African nations.

Improved security for these people will not come as the result of breakthroughs in biotechnology, nuclear science, or materials research, but a marked improvement could come about through greater access to such simple technologies as plumbing, refrigeration and vaccinations.

Those who live on the margins of our high-technology society, who are desperate for the most basic necessities, are forced to place inordinate burdens on their immediate natural environments. Thus, poverty drives ecological deterioration as the world's poor over-exploit their resource base in an effort to survive. With no alternative means of cooking, they are forced to gather firewood from their immediate surroundings, thus causing forests to recede farther and farther from their communities. In search of a means of income, they clear-cut tropical rain forests for slash-and-burn farming, which lasts but a few growing cycles before additional plots need to be cut.

Ecological decline, in turn, perpetuates poverty, as degraded ecosystems offer diminishing yields to their inhabitants. The result is a self-reinforcing downward spiral of economic degradation and environmental damage.

The distribution of technology in some of its most basic forms to the world's poor is urgent, as it has been for decades. It now assumes even greater urgency, however, since the process of economic growth in the developing nations—if based on CFC-emitting refrigerators, carbon-spewing vehicles, energy-wasting appliances, and pesticide-dependent crops—will lead to environmental damage that overwhelms all efforts on the part of the developed nations to curb their own polluting practices. The industrial nations need to act now to help the developing world achieve *economic prosperity* and *environmental protection* through the introduction of sustainable technologies at the beginning of this industrialisation process, and these industrial nations

must demonstrate their commitment to global environmental security by their own rapid action in adopting these sustainable technologies, and making them available under equitable conditions to all newly industrialising countries.

In many ways, this is the biggest challenge of the so-called "post-Cold War period". Science and technology will play important roles, and in some ways analogous roles to what they played during the Cold War. We shall be marshalling the power of technology to protect against threats of ominous, yet uncertain, dimensions. And also as in the East-West military confrontation, we shall need to marshal our skills at international diplomacy and global co-operation. Just as technology did not resolve the threat raised by political and ideological differences between the United States and the Soviet Union, technology alone will not solve the world's serious environmental and economic problems.

The United Nations will have a vital role to play in helping bring nations together to reach international agreements governing environmental activities. It is already playing this role in working towards an international convention on stabilising greenhouse gases. Such agreements may need enforcement and verification provisions not too dissimilar to those contained in treaties restricting military technologies.

Conclusion

Technology alone will not solve our many environmental, economic and military problems. Our search for peace and security must be based on a concept of international security that extends beyond the bounds of military concerns and into the realm of environmental and economic matters. In our efforts to understand how science and technology fit within this security context, we should not look simply at emerging technologies, even those that are sustainable and stabilising, as being the principal candidates for drastic improvements in peace and security on our planet. We must keep in mind that security for as many as one fourth to one half of the world's inhabitants would be revolutionized if they had access to some of the most basic existing technologies of our times.

Equitable access to resources and technology is an age-old problem. Today it must be faced on a global basis. It demands that we create a new world economic order that combines the best that the capitalist and socialist economies can offer. Just as a great American President declared that a nation cannot exist half slave and half free, we must

declare today that a secure global society cannot exist half in slavery to poverty and deprived of opportunity, and half free to develop its potential and achieve its dreams.

President Havel, himself an intellectual, said, "... intellectuals cannot go on for ever avoiding their share of responsibility for the world and hiding their distaste for politics under an alleged need to be independent."

Speaking to the Heads of State at Versailles, 71 years ago, another intellectual, President Woodrow Wilson of the United States, author, academic, and University President before he entered politics, said:

"It is a solemn obligation on our part... to make permanent arrangements that justice shall be rendered and peace maintained."

He went on to comment, with great prescience for his time:

"Is it not a startling circumstance... that the great discoveries of science, that the quiet studies of men in laboratories, that the thoughtful developments which have taken place in quiet lecture-rooms, have now been turned to the destruction of civilisation?... Only the watchful, continuous cooperation of men can see to it that science... is kept within the harness of civilisation."

But Wilson's main concern was democracy and justice. He made this clear with these words:

"Gentlemen, the select classes... are no longer the governors of mankind. The fortunes of mankind are now in the hands of the plain people of the whole world. Satisfy them, and you have not only justified their confidence, but established peace. Fail to satisfy them, and no arrangements that you can make will either set up or steady the peace of the world." In this post-Cold War era much more must be done to satisfy the plain people of the whole world.

NEW TECHNOLOGIES AND SECURITY: PROSPECTS AFTER THE COLD WAR

The initiative taken by the Department for Disarmament Affairs of the United Nations Secretariat to hold a forum for discussion of the way in which the development of technology affects international peace and security is both useful and timely. The subject of science and technology is topical as never before. At a time of radical changes in the world, a time when mankind is emerging from the Cold War and beginning to shape collectively a new, post-confrontational world order, there is a need to rethink profoundly the approaches to the role and place of scientific and technological progress in an all-round search for ways to enhance security.

The holding of this Conference in Japan is highly symbolic. Back in 1945, Japan experienced the horrible nuclear consequences of a major military and technological breakthrough of our era. At the same time, modern Japan is a State that has been able to use scientific and technological progress to improve the quality of human life. There are few other countries where advances in science and technology serve so effectively to promote economic growth. Japan is a good example of the way a country is today achieving the status of a world Power, not so much by accumulating sophisticated arms, as by arming itself with creative minds, which, by relying on competitiveness, science, technology, management and talent, are enabling the nation to take great economic strides forward.

New technologies are setting a fast pace for change in our world. Through science and technology we are able to make our world better, richer, and more liveable for everyone. However—and this is one of the main challenges of our age—technologies have brought new means of destruction into our life, and have confronted the world with a real prospect of self-destruction.

After the Second World War, science and technology flourished as never before and revolutionized many aspects of modern life. They created an unprecedented productive potential, and became a major influence on political thinking and international relations in general. It would be no exaggeration to say that, on the one hand, the scientific and technological revolution is responsible for increasingly more lethal weapons and for the continuing military rivalry among States while, on the other, it has made the world interdependent, integrated and technologically uniform on a scale never known before. Science and technology make it possible to meet virtually all of the global challenges. They generate new ideas about international interaction and the security of countries. In addition to economics and politics, a new reality embracing all aspects of life has emerged in international relations—the reality of science and technology.

Until very recently, advances in scientific and technological knowledge inevitably bore the stamp of the Cold War mentality and policies. Confrontation, mutual mistrust, and a thick shroud of secrecy, both in the West and in the East, fragmented world state-of-the-art science and technology. Creative effort was spent on the development of ever more sophisticated weapons and, following the logic of “action—counteraction”, on winding up the spiral of the arms race. After nuclear missiles, we saw the advent of thermo-nuclear arms, the emergence of anti-ballistic missile (ABM) systems and multiple independently

targetable re-entry vehicle warheads to penetrate them, military applications of micro-electronics, miniaturisation of highly complex systems, and so on. We were also dragged into this process. In other words, during the Cold War new technology not only became the way of the arms race, but, to a considerable degree, its driving force, edging mankind closer to the nuclear abyss. The stereotype mentality of the time relied on power methods, attempting to "catch up with" or to "get ahead of" the rival in the arms race.

Moreover, the Cold War produced ideas for wearing the adversary out militarily, technologically and even economically. This resulted in new, major military research and development programmes carried out at an intensified pace, including new programmes in the area of ABM systems and stealth technologies, which cannot but have a destabilising influence on the current strategic balance.

Technological progress blurs the distinction between nuclear and conventional arms, a fact which heightens the risk of armed conflicts with the most unpredictable consequences. We cannot, of course, overlook the fact that the scientific and technological race between the two principal military and political blocs is accompanied by the spread of a whole range of sophisticated types of weapons throughout the world. Today the problem of non-proliferation in its three aspects—nuclear, chemical and missile—is urgent as never before. A close second and increasingly pressing challenge is that of preventing the spread of conventional armaments, especially of their most destabilising types.

Today, when human mentality is ridding itself of militarist shackles, there is a growing awareness of these realities, encouraging more people to look for means to achieve peace other than through force. The world community urgently needs policies aimed at demilitarising international relations and making it possible to proceed immediately with channelling resources into creative development.

In recent years we have taken a few steps back from the brink of the nuclear abyss. It is unlikely that anyone will question this fact. The process of real nuclear disarmament is now under way. The negotiations on strategic offensive arms, chemical weapons and conventional forces in Europe have entered a qualitatively new phase. Verification and openness have become inseparable accompanying measures. A shift from a desire for military superiority to reasonable sufficiency is emerging in the minds of the participants in the talks on military security.

Admittedly, much will have to be done to make these trends irreversible. In this context, continuous disarmament, developed into

a global process involving all States, becomes vital. A positive feature of our time is the growing integrated effort to counter the risk of war in a whole number of areas. The processes launched in Europe to reduce military confrontation are in many respects linked to the security in Asia. And my country, the Soviet Union, which stretches over both Europe and Asia, could be a sort of connecting link in this regard. For example, the Treaty between the Soviet Union and the United States of America on the Elimination of Their Intermediate-Range and Shorter-Range Missiles—the INF Treaty—born of the European military situation, resulted in the elimination of Soviet missiles in the Asian part of the USSR.

Our unilateral steps to reduce our military forces extend not only over European, but also over Asian, regions. We want to broaden the dialogue with our neighbours and all interested countries to establish new security structures in Asia. In line with this are the well-known initiatives advanced by Mikhail S. Gorbachev, in particular at Vladivostok and Krasnoyarsk. It is important that the positive changes under way in Europe should extend to the entire Eurasian area.

We believe that an independent area of effort is that of bringing under control the use of scientific and technological breakthroughs for military purposes as well as preventing new developments in man's capabilities to destroy life on Earth. This is a very tough challenge but one which has nevertheless to be addressed, because it cannot be allowed that while one category of arms is being reduced or eliminated, it is being replaced by qualitatively new weapons. However, even though at present we can have a degree of confidence in the possibility of eliminating the risk posed by nuclear and chemical arms in some areas, we cannot state with certainty that tomorrow new technologies with a destructive potential will not be developed in other fields, capable of invalidating all previous results.

In other words, while with one hand we are erecting a new edifice of security, with the other, willingly or unwillingly, we are laying the foundation for developing material which could destroy this edifice tomorrow—and we are very methodical about it in our various, respective laboratories and design bureaus. Is it not time to ponder this situation? Do we act responsibly when we leave the problem of the possibility of revolutionary technologies becoming part of military potential largely outside the scope of the active, practical interaction of States and take no steps to prevent this from happening?

A number of countries, including the Soviet Union, India and some other States, have put forward a series of ideas at the United Nations

to prevent the use of new technologies for weapons purposes. In this context, already at the third special session of the United Nations General Assembly devoted to disarmament the Soviet Union advocated systematic evaluations of scientific and technological achievements, primarily in the area of laser, genetic and electromagnetic systems. I would also recall our standing proposal for banning the development of non-nuclear arms based on such physical principles, which, in terms of their destructive capabilities, are close to nuclear weapons and other means of mass destruction. The Soviet Union supported United Nations resolutions calling for the setting up of national groups of experts to monitor the developments in science and technology with potential military applications. We have established such a group composed of eminent Soviet scientists. We view such steps as a contribution towards greater co-operation established under the auspices of the United Nations to impose constraints on the development of increasingly more destructive and deadly types and systems of weapons.

It is my belief that the Conference on Developments in Science and Technology and their impact on International Peace and Security held at Sendai will impart an important intellectual impetus to the understanding of these problems. Today, when we are beginning to restructure international relations on a non-confrontational and non-violent basis, there is an urgent need to find ways to change our thinking and practices as regards the role of science and technology. In this context, we should not only abandon stereotypes of behaviour in international affairs based on force, but also reject the philosophy of "technological determinism", under which scientific and technological progress inevitably stimulates the arms race, the argument being that since it is impossible to suppress human thought, it is also impossible to stop the modernisation of weapons.

However, in any State, military research and development programmes and the levels of their financing and of their technical and manpower support are largely determined on the basis of political decisions and military and political views. In today's changing world there is a tendency for perceptions of defensive requirements to be out of touch with the times and largely unacceptable. It is becoming increasingly clear that it is a delusion to believe that more highly sophisticated weapons guarantee greater security. In general, one must ask whether the scientific and technological revolution has brought a stronger sense of security. However one assesses the past, today's security is increasingly aligned with the arms reduction process and

not with any unbridled buildup; today's security is more and more associated with the transition to defensive doctrines and a corresponding restructuring of the armed forces. It is necessary to establish regional security structures, based primarily on controlled transparent political and legal containment, and not on military deterrence. Against this background, lack of readiness on the part of some States to make significant changes in their ways of using science and technology in the military sphere appears anachronistic. Pragmatic efforts in this area, which determine the military tomorrow, are so far based on the political permafrost of yesterday.

Of course, there are and will be many problems along the way to what can be described as military and political conversion. This is largely an unexplored land, and a problem that requires a philosophy and actions fertilized with new thinking. Paradoxical as it may seem, in the very near future the interests in creating new peaceful conditions will even call for research and development programmes in the military field. I am referring to the need for developing special disarmament technologies. In particular, there is a growing demand for verification and control technologies, methods of detection and effective systems that ensure confidence in compliance with agreements being elaborated in the area of arms limitation and reduction.

Generally speaking, we need to answer the following question: Is there a risk that, as a result of military and technological rivalry and the miniaturisation and growing sophistication of weapons, the disarmament process will grind to a halt over verification problems? For example, numerous difficulties arose at the Strategic Arms Reduction Talks in elaborating measures to verify existing types of systems, including problems with cruise missiles.

The emerging international art of disarmament thinking is already yielding its first results in terms of verification procedures for a number of complex technical problems. It is significant that underlying these technical solutions are primarily political decisions that provide for maximum cooperation among the parties in conducting verification, readiness to adopt measures to facilitate verification, including the introduction of special technical means, and openness in the military sphere. A new development is the practice of conducting joint experiments, trial inspections, in other words, trial runs of verification techniques on a preliminary basis already at a phase of the elaboration of specific disarmament agreements.

An important aspect of the current period is the emerging tendency for the economics of disarmament to seek out the most effective ways

to achieve conversion. It is clear that here we cannot do without relying heavily on science and technology, just as we cannot do without converting science and technology themselves.

In particular, we need to form some idea of the possible economic peace dividends, decide on the most effective forms and methods of using the financial material and intellectual resources released from the military sphere, and devise a strategy for developing relevant enterprises, companies and entire sectors of the industry. In our country, conversion of certain production facilities is already under way and the process is gaining pace. Our target is that by 1995, 60 per cent of the overall production in the current military-industry sector should consist of goods for the national economy. I will not conceal the fact that the implementation of these tasks is running into a number of difficulties. This is a new area and an integrated approach is called for to address all the problems that arise here. I believe that everybody will reap an economic benefit from pooling the efforts of different countries, sharing their experience and establishing broad multilateral co-operation.

In our interdependent world, security is by no means a simple concept. Not only military but also economic and environmental elements, among others, are included in its meaning. There is no need to belabour the point that in today's world the latest developments in science and technology have a bearing on all aspects of security. They increasingly emerge as one of the principal free-standing areas of interaction among States in developing the structures of international peace and stability. The products of the human mind are becoming one of the most attractive exchange commodities. The number and share of science-intensive products introduced into world economic relations and international economic structures are growing, and two trends are becoming increasingly visible: one towards the international division of labour, the other towards integration.

These tendencies highlight the importance of cooperation, concerted and mutually complementary scientific and technological efforts on the part of different countries, as major factors in the advancement of each and every State, especially in the context of the new global challenges confronting mankind today. There are some problems, such as generating energy at thermonuclear reactors and improving the environment, which it is difficult, expensive and sometimes simply impossible to solve "single-handedly".

Our country is firmly determined to integrate our economy into the world system. There is no question that, in scientific and

technological terms, the Soviet Union is making an important contribution to humanity and has much more to contribute. The talent of our nation has produced outstanding results; our achievements in space exploration, physical sciences, chemistry and medicine are well-known. However, while we can make new discoveries, we still find it difficult to turn them into products that would make human life more comfortable, affluent and intellectually richer. That is why we believe that it is in our national interest to share what we have in return for what other countries know how to do well. We stand ready to promote in every way mutually beneficial exchanges, contacts and flows of technology and, where need be, to combine our talents with the organisational and managerial genius of others. At the same time, we cannot ignore the fact that a view of the world defined in terms of the Cold War mentality has had a negative effect on modern technological exchange processes. The West still considers questions relating to such exchanges mainly in terms of its stereotyped ideas about force and the need to ensure for itself a scientific and technological edge in the military sphere. However, in our changing world the perception of the threat is also undergoing a radical transformation. Today's sound from the political tuning-fork is: one civilisation, one destiny, human values first.

Until recently, the Berlin Wall symbolized the ideological division of the world. Today, a division runs through the field of scientific knowledge which may be described as the COCOM (Co-ordinating Committee for East-West Trade Policy) fence. If we have been able to dismantle the Berlin Wall, is it not time to reconsider our attitude to the COCOM fence? The discrimination against contacts and exchanges of state-of-the-art technologies is hardly in line with today's realities. High barriers and closed doors must not stand in the way of international trade and co-operation. Together with other countries, we have begun to try to understand each other's concerns in world affairs, and this has brought more rapid progress. When we are told that our partners have concerns about possible military applications of technological exchanges, we are prepared to look for ways to alleviate those concerns. For example, instead of hiding behind various lists of banned items, we should perhaps seek out accommodating approaches and start by explaining our concerns and clarifying our positions. Since East and West have been able to engage in negotiations on each other's military views and doctrines, can they not launch a dialogue on how to ensure that scientific and technological exchanges are peaceful?

We believe that it is time to think about common European, Eurasian and world scientific and technological spaces, about systems and structures of scientific and technological confidence. This is a new area, yet an area important and vital for the whole world, including of course our country, our economy and our *perestroika*. Let me recall an idea by President Mikhail Gorbachev, who proposed that experts and representatives of relevant Governments get together to discuss all the problems that had piled up because of the Cold War and clear the passage for a normal two-way flow of scientific knowledge and technical expertise. We advocate immediate consultations between East and West on dual-purpose technology transfer rules, which, if need be, could provide for an inspections procedure for the subsequent application of this technology.

Greater mutual confidence, openness and, where necessary, checks on how scientific and technological cooperation is used must bring down existing barriers in the area of technological exchanges. The first results of the thinking are already evident, for instance, in the nuclear field. The case in point is the Statutes of the International Atomic Energy Agency, which was elaborated in the 1950s. This document states that co-operation within the framework of the Agency must be carried out only and exclusively for peaceful purposes. We could explore the idea of open laboratories, organising appropriate inspections, where necessary, and other joint work on a larger scale. We have managed to overcome the secrecy syndrome in the area of controlled thermonuclear fusion, and, together with the United States, Japan and Western European countries, launched a joint scientific project. Generally speaking, we need a wide-ranging unbiased dialogue. We are ready to engage in it.

Finally, a word about the environmental aspect of security. To a large extent, scientific and technological progress has been disastrous to our environment. However, science and technology must also generate solutions to improve it. Major problems here are transborder challenges that call for an effort on the part of all and for combined national potential.

Global environmental problems can be solved only on the basis of state-of-the-art science and technology. In this context, we need a special regime for technological exchanges that would, as far as possible, take into account both shared interests and the concrete requirements of each State, depending on its specific environmental situation.

On the basis of the most recent advances in science and technology, especially in space exploration, we need to promote co-operation in

monitoring the Earth's environment, in providing urgent environmental relief, and so on. We could explore the idea of launching a new "strategic environmental initiative", which is being discussed by a number of experts, in order to determine whether it merits serious consideration. In the framework of one master project, we could pool the world's best minds to elaborate effective technological solutions, as yet unknown to us, to save the planet from an environmental catastrophe. For many countries, this initiative would be an attractive idea, which, unlike its military near kin—the Strategic Defence Initiative—would not raise fundamental objections.

In our age, science and technology are becoming an inherent element in the comprehensive search for a new, post-confrontational system of peace, security and co-operation. In our opinion, the United Nations, together with its family of specialized agencies, is called upon to play a major positive role in finding approaches in this area, commensurate with the challenges of our age. Scientific and technological progress, especially on the eve of a new millennium in the history of mankind, must serve only to enhance international peace and security and, ultimately, to enable everyone to live a full and worthy life.

NATIONAL POLICY-MAKING AND INTERNATIONAL DIPLOMACY IN AN ERA OF RAPID TECHNOLOGICAL CHANGE

Evolution of Collective Security

Evolution in the direction of the enhancement of national security through collective effort is a very recent phenomenon. Convulsions created by the two world wars accelerated the process and forced new thinking with regard to the definition and nature of national security and the means to secure it. In the past, classics authored by Kautilya in ancient India, by Machiavelli in the era of European Renaissance and, more recently, by Clausewitz, though reflecting differences of age and clime, are perceived as expressive of a common intent, namely the use of diplomacy to promote predominantly national interests.

The experience of destructive conflicts on a vast scale, a perception of a shared interest in political stability, and the pressures of commercial and of recent technological interaction and interdependence have led to a change in the appreciation of the essence of national interest and to a redefinition of it. This experience and the logic of rational interaction in the common interest have led to a search for

collective security. The experiment that captured the imagination the most at an early date was the one carried out at the Congress of Vienna in 1815. This exercise in collective security was more in the nature of managed balance of power relying on equilibrium, restraint and cooperation on the part of the States involved. However, the principle was a narrowly perceived balance of individual interests, and the collective effort was not supported by an institutional framework or mechanism that could cushion, regulate and resolve threats to the equilibrium, whether actual or perceived.

The trauma of the First World War, produced by fears aroused by the disequilibrium in the balance of power in Europe, led to the search for some sort of framework or mechanism, and this took the form of the League of Nations. However, history proved this attempt to be short-lived and abortive inasmuch as the post-Versailles political reality did not reflect the principle of equality of States. The unprecedented and devastating impact of the Second World War and the unravelling of the colonial era led to a third attempt at an approach to collective security. Its hallmark was the creation of the United Nations, arising from an idealism reflected in two important principles enshrined in the Charter of the United Nations, namely, the equality of all nations, reflected in the principle of one country, one vote, together with the regulatory mechanism of the Security Council, and the prohibition on the use or threat of use of force.

These principles envisaged the creation of a new international security order that differed from the earlier experience of a "managed" balance of power. It also created a universal organisational structure designed to maintain such an order. This structure has, mercifully, proved to be more enduring but has not prevented differences from arising between national policy-making and the collective diplomatic endeavour. International diplomatic efforts based on the Charter of the United Nations soon ran counter to national policy-making in the field of security, especially as security doctrines continued to reflect unilateral initiatives predicated on doctrines of deterrence and the global rivalry between antagonistic pacts led by two overwhelmingly predominant military Powers. Once again, the vision of co-operation was conditioned and diluted by balance of power equations inherent in the Cold War confrontation. However, the structure has stood the test of time and the United Nations has played an important role at various times in matters pertaining to global security. This role has been strengthened of late and the sea change in political relations between the East and West augurs well for the evolution of a

constructive global dialogue, within which the problem of the qualitative arms race should be considered a matter of central concern on the agenda of means for strengthening collective security on an enduring basis.

The Logic of Globalism

The central factor differentiating the current age from the one we are entering in the twenty-first century is, and will increasingly become, the determining role that science and technology play in all aspects of our lives, at both the personal and the societal levels. This calls for a new and historically responsible mode of thinking in tackling the challenges of our times with creativity and sanity.

The new globalism imposed by the ubiquitous pressure of technology matches, of course, the globalisation of our problems. The pressing problems of our day are susceptible to solution only through collective, global endeavour. The age of technology demonstrates that there is no alternative to the vision of "one world—our common future". This is the categorical imperative of the modern age. The increasing catalogue of problems amenable to solution through recognition of this imperative affirms this, be it global warming, depletion of the ozone layer, the far-reaching effects of regional environmental transformation, industrial pollution, the depletion of energy resources, the demographic pattern and the population explosion, the challenges of extreme poverty, terrorism, drugs, global growth and development, financial and monetary interdependence or collective role-making in economic areas.

Challenges in these areas and many other joint tasks can only reinforce the logic of a collective approach to issues in regard to which unilateral or partial measures may in the past have been the norm, or considered adequate. Besides, the multidimensional character of various areas reveals the manifold linkages between them and demands the overarching vision in which these and other areas can only be components.

The imperatives of the "technology age" span all fields of activity, and not security alone. However, the search for lasting global security, which holds the key to the elimination of existing dangers and the prevention of new ones, is not independent of, or even only an accessory of, the cooperative approach arising out of a holistic understanding of our planet's future, but rather central to it. The salvation is collective and is to be found in an understanding which has been slow in coming but which will force itself upon us. It is surely preferable that we

should embrace it in good time rather than that we should acknowledge it through painful and possibly irreversible lessons.

Centrality of Technology in the Contemporary World

It may not be an exaggeration to state that technology is the motive power of the modern age. Its centrality is increasingly becoming a basic fact of politics, economics and culture. In the military and security areas it is the key determinant. It appears as one of the primary explanatory variables of current trends towards "globalisation" in the world economy, both as an "enabling factor" of globalisation and as a source of demand for more globalisation. This results from the following characteristics: globalisation is technology-driven and technology-focused; globalisation is cross-national and cross-sectoral; globalisation strategies rely on the mobility of factors.

Over the last few decades, technological innovation has been changing the basis of international trade through de-materialisation, the shortening of the product-cycle, and growing involvement on the part of Governments in matters related to technology. These underlying characteristics of techno-globalism are pertinent to global security and to the qualitative arms race as well, as technology is use-neutral and has common characteristics of propulsion and dissemination. Thus, globalisation of "military" technology would, with a time lag, be as much a fact of the modern age as is already the case with "civilian" technology.

Reaching for a Benign World Order

It is clear that the suspicion and hostile motivation generated by a fragmented world order, which have fuelled the arms race and created adversarial stances and military doctrines, can be finally laid to rest only in a peaceful and non-violent world order which destroys once and for all the seeds of conflict. The confrontation can be resolved by returning to the inspiration which informed the basic provisions of the Charter of the United Nations. The action plan proposed by India for a global dialogue at the third special session of the General Assembly devoted to disarmament with a view to ushering in a nuclear-weapon-free and non-violent world order and the unwinding of the various manifestations of the arms race was an attempt in this direction. It takes into account the security concerns of all States. At one level, we need to build confidence and trust and at another to develop new institutional mechanisms to cater to the imperatives of the technological age. The idea of a multilateral verification body under the guidance of

the United Nations has to be seen in this context as a support to efforts to take scientific and technological developments from under the shroud of military secrecy. There is a need to sensitize all decision-makers to the contradiction inherent in the logic of collective security in the emerging world, which demands the removal of unpleasant technological surprises and the containment of its negative potential on the one hand, and the ethos of military secrecy that currently perpetuates polarisation and insecurity rather than generating collective purpose, on the other. The choice is clear. Humanity can either master its destiny through strengthening the collective approach or undermine its future through division. Technology can serve either end.

The century is closing with more hope than it began. The development in relations between major post-war adversaries and regional developments all over the globe are in the direction of healing and overcoming rifts that have plagued us in the past. This favourable political evolution has to be accompanied by positive efforts to harness, to the benefit of all, science and technology, the single most important propellant in the times before us.

Conceptualisation of the Problem of Global Security

There is a further parallel between the imperatives technology is creating in the civilian and economic fields and those in the security and military fields. Over the past few decades, rapid advances in a number of technologies have contributed to shaping not only the ways in which individual enterprises interact with one another, but also the way in which we think about such interactions. The term "globalisation" has emerged as expressing an essential characteristic of this period of rapid change. The term designates the set of processes, trends and strategies through which an activity tends to spread across national boundaries, traditionally accepted sectoral boundaries and market segments.

The link between technological innovation and globalisation was at the very root of the modern usage of the term "global", since Marshall MacLuhan's "global village" referred explicitly to advances in technologies. This fact of international economic life in general urgently calls for a broad-scale revisiting of a number of our conceptual and analytical tools in the area of global security as well. There is a compelling need to update and to apply the reasoned analysis of the institutional national and international regulatory and anticipatory framework in which concepts and approaches have a breadth of vision that would match the breadth of the emerging challenge.

The process of moving from actual and potential destabilising fragmentation to an integrative globalisation within an enlightened notion of collective security requires conscientious debate and management. The contemporary situation offers no alternative but co-operative multilateral action in the common interest. Techno-globalism forces on us the need for co-operative conceptualisation of the future world order.

Role of Security Doctrines— Fragmentation versus Globalisation

The starker reflection of the dichotomy between the emerging logic of globalism and that of a fragmented world is the phenomenon of the arms race. The arms race has been the antithesis of the search for collective security, and science and technology—which should have provided the means for overcoming poverty and disease and which can be a creative unifying force—have increasingly been devoted to military purposes. The large proportion of resources, both material and human, spent on military R&D requires no repetition. Equally harmful to the security environment has been the relationship between security doctrines and the development of new weaponry propelled by technological advance. Doctrines have become the tool of military technology rather than technology, serving the ends of enlightened doctrines. Massive retaliation, flexible response, war-fighting, countervalue and counterforce are doctrines responsive to emerging technological capability and future developments in areas such as earth-penetrator warheads, manoeuvrable re-entry vehicles, ballistic missile defence systems; and others that will emerge, based on new technological principles, will further refine, develop or refashion security doctrines to accommodate the technological potential which has emerged.

Allied with this is the vast reach of the scientific bureaucratic-military-industrial complex with its dependence on the arms race. Indeed, the very self-interests of this faceless and powerful constituency of vested interest is devoted to developing and refining doctrines intended to legitimize and validate the continuation of the qualitative arms race. These are formidable forces that proponents of the new vision have to contend with, but we may take hope in the fact that in the dramatically altered awareness and politics of today even these forces can be transformed. In accelerating this outcome, re-evaluation of the role played by science and technology in the security environment of the future and in developing enlightened security doctrines would be a central factor.

Proliferation of Technology

The underlying characteristics of techno-globalism, because of differential national economic levels, are such that they are not necessarily conducive to a global optimum: in the absence of a relatively free flow of technology or of mutually agreed international guidelines, technology-focused globalisation could very well lead to further fragmentation in the world economy. The desire of technology vendors to maximize monopoly returns compounds this problem. This pattern of uneven advantage has a parallel image in the military sphere as well. However, whereas the need for balanced guidelines in the economic area is beginning to be recognized as a means to counterbalance the increasing danger of a lack of governability in the world economy—or at least has become an important issue among sovereign participants in the discussion—the military field has remained immune from any discourse as to the implications of techno-globalism. In that area, insulation of technology-driven advantage from replication is still part of the non-proliferation and technology containment ethos. There is an enduring fallacy in some quarters that the technological divide can be perennially safeguarded. Technological advance does not respect borders or frontiers and societies pioneering such advances cannot remain islands entire unto themselves. The challenge of governability and manageability in the techno-global age cannot be met with concepts that have already proved their illusory character.

It is becoming increasingly manifest that there can be no barriers to human knowledge. What is achievable by only a handful of States today will in future years be realized by many more, compounding the complexity and dangers in the global security environment. Wisdom therefore dictates that there should be a collective compact that routes which will have a profoundly destabilising and threatening impact on the global security situation should by shared agreement not be explored and pursued. Scientific and technological developments cannot and must not be arrested, but must be oriented decisively towards peaceful uses. It cannot be emphasized sufficiently that science and technology cannot be allowed to become masters of war: they must remain servants of peace.

Evolution of Weaponry

Since primitive times technology has been the major influence in the development of military power. A remarkable proportion of man's effort and ingenuity has been dedicated to slaughter and destruction.

Turning-points in the unremitting escalation in such capabilities in terms of military technology are well known: gunpowder, naval design, invention of alloy steels, TNT, automatic weapons, armoured vehicles and tanks, military aircraft, chemicals, radar, shaped charges, jet aircraft, proximity fuses, guided missiles—the list is endless. Qualitatively, a truly historical departure took place when Einstein's discovery of the equation concerning the equivalence and interconvertibility of mass and energy led to the production of doomsday weapons. More than any other development in weapons technology in the past, this exercised an influence on international diplomacy.

As technological momentum is cumulative and progressively subtle, during the last few decades characteristics of major weapons systems, whether on land, sea or air, have changed beyond recognition and have reached an order of sophistication and magnitude undreamt of even when the first nuclear bombs were dropped. This has been made possible mainly by developments in micro-electronics and other research areas which articulate well with electronics. Such micro-electronic systems have revolutionized the guidance and control of weapons, communications, command and intelligence. The level of sophistication of existing military technology is qualitatively higher than that of technology in the civilian economy.

The force of military research and development, which has produced endless refinements and creates ever "smarter" systems, is almost autonomous. Technological sophistication and not the volume of hardware is the new criterion of military advance. Scientific discoveries are quickly incorporated in new weapons and systems of offence and defence and the tempo of innovation is encouraged at as fast a pace as possible because of the fear of lagging behind in the breakneck technological race, compounding the uncertainties and racing ahead of both strategy and tactics.

The attainment of technological superiority has thus become the major preoccupation of leading military technological Powers and the difficulty in evaluating and balancing the effectiveness of the whole range of new weapons systems on both sides of the post-war divide underscores the fallacy that military equilibrium can be either maintained or indeed perceived with precision. The imperatives of military technology make political judgement difficult and the sophistication and complexity of such technology enormously complicate efforts to control or cap the arms race.

Political decision-makers are hardly better placed than the man in the street to appreciate the precise significance of the various systems

and are indeed extremely vulnerable to advice from advisers with special interests. Understanding of the matter is frequently in the hands of small groups of *cognoscenti* whose esoteric arguments may not radiate much illumination in ordinary minds (indeed, if many insiders are to be believed, in any type of mind). What is the common feature of such advice is that it is laced with a sense of urgency or the perceived creation of an essential advantage or serves the self-interest of a very large constituency of "believers". Headlong momentum is the intent, not the imponderables or consequences of the direction in which it takes us.

As we know from the prescient warning against the juggernaut of the industrial-military complex delivered four decades ago, the vast constituency mentioned earlier composed of industry, military, scientists, engineers, bureaucrats, business interests and politicians constitutes a critical and catalytic interest group for the maintenance of the qualitative arms race. It produces the theorists, developers and deployers of ever more complex and destructive systems and devices. At the close of the twentieth century, however, mankind was at the crossroads. The ethics question over which the first nuclear scientists agonized is again confronting us on a larger scale and is fraught with a new threat, with mankind on the threshold of futuristic technological capabilities. This puts before us a clear-eyed choice, a choice represented by the use to which we wish to put science and technology. The choice cannot be evaded by a belief that we are the masters of science and technology as applied to armaments, which is an illusion: we are the victims of it. Moreover, mankind can be hostage to the technological arms race in more than one sense. It is not only that technology has begun to dictate our decisions away from the course which sanity and wisdom should take but that, despite all sophistication, we are putting ourselves in the hands of technology failures, the consequences of which we cannot predict. Man must remain master of the situation and not a mere observer or plaything of independent forces he has himself unleashed.

The recent upturn in the political climate if maintained can give us the breathing-space we need to take control of this runaway escalation in the qualitative arms race and to arrest it so that science and technology may serve the vision of a peaceful, constructive and non-violent world order and not a world disorder of fragmentation, friction and distrust. We have to believe that with sustained and enlightened political will and dialogue the current ethos can be transformed.

It must be recognized that, if the principles on which lasting collective security can be safeguarded are to be realized, that security must have as an essential corollary the conscious termination of the extension of the arms race in areas and spheres which would contribute to the destabilisation of the security environment. No healthy or confident dialogue on global security in the common interest can be conducted unless we can collectively agree not to undermine this dialogue through a constantly shifting environment thus created.

Science and Technology in the Service of Disarmament

The search for ways to terminate the qualitative arms race cannot be taken to imply curtailment of scientific and technological research *per se* but only control of its direction. Apart from all forms of civilian use, technological research can also contribute progressively to more reliable forms of verification of arms control agreements and thereby contribute significantly to building confidence in more ambitious agreements which will be part of the disarmament agenda in the years to come. We can hope today that one development of verification and arms control methods will lead to a much more reliable and rational mechanism for ensuring security in the future. Verification technology can contribute to scientific and technological research projects. We can already see the influence that verification has had on seismology and space technology. New armaments are born in laboratories. If major laboratories are transparent in their activity, science can act as an instrument for creating understanding and confidence in the fields of plasma research, particle beam weapons and accelerators, among others.

Interactive National and International Processes

Although the search for the ideal paradigm for ensuring lasting security for all nations has been arduous and painful, the vision of collective security to which all nations may subscribe has gained ground through both negative experience of the contrary route and positive experience of the gains made in a positive direction. A fitful progression towards the logic of multilateralism has characterized the present century. National policy-making and international diplomacy and obligations are part of an interactive process which imposes its own disciplining form and, where required, restraints on the dynamics. Broadly-speaking, the national policy objective of refraining from war can become legalized or formalized, through obligations entered into by way of international treaties, laws of war, disarmament agreements and workings of the less precise but nevertheless strong ethical

imperatives of religion or morality. Legal instruments safeguard the concerns of individual member nations and check threatening or destabilising developments which may emerge without multilateral restraints. Once legalized, however, this form of international diplomacy in turn influences national policy-making and emerges as an independent fact and factor in national policy. In the modern world, such a development is necessarily multisectoral and, with the increasing interweaving of global interests, will determine the pattern of future international collective behaviour. Collective consideration of the destabilising potential inherent in scientific and technological developments for the global security environment is now an urgent joint endeavour.

Elements to Be Considered in National and Global Approaches

In determining the course of action, we should take to avert the dangers inherent in the qualitative arms race, we can define the methodology and measures only progressively as this is a new area for global consensus, although not a new area of concern inasmuch as it was agreed at the first special session of the General Assembly devoted to disarmament in 1978 that, along with the quantitative aspect, the qualitative aspect of the arms race must also receive attention. In the subsequent period, bilateral and multilateral disarmament efforts have focused primarily on the quantitative expansion of arsenals and the issue of the qualitative arms race has been left to the side. There is, therefore, first the need for agreement that the qualitative arms race has to be accorded the centrality it deserves within the disarmament agenda before the world community and in the context of the universally shared goal of complete and general disarmament under effective and verifiable international control. In the renewed consideration of this issue, the following pointers and elements are relevant in the formulation of both national policy and international diplomacy in an era of rapid technological change:

- The dialogue on ways of effectively addressing the qualitative arms race should not impinge on the momentum of research and development activity. The issue is one that concerns direction.
- The data and information which would form the substance of ongoing consideration should not seek any commercial or defence-related information which is not already available or which cannot be made available voluntarily.

- The necessity of both national and international effort through suitable monitoring mechanisms should be recognized (a pioneering provision for such interaction is incorporated in the proposed chemical weapons convention).
- The role of science and technology in supporting disarmament agreements, particularly in respect of extensive and complex verification systems, will grow in the years to come and must be strengthened. Such essential underpinning in confidence-building cannot be taken to be part of the question under consideration.
- There is no clear dividing line between civilian and military technology except in its application and use. Monitoring scientific and technological developments should not be allowed to influence the pace of civilian research *per se*.
- Dual use of technology should not obscure the fact that a very large percentage of investment on research is linked to the defence field. Many research programmes in universities and institutes are funded under the heading of defence. This has the effect of making defence applications respectable. However, confidence generated by collective understanding in a transformed political climate should have a beneficial effect on national funding strategies.
- The areas for monitoring would be across the broad front of the cutting edge of technology. Diverse and interlinked areas such as micro-electronics, semi-conductors, computers, sensors, communications, data processing, miniaturisation, fuel technology systems, guidance systems, materials, directed energy, laser technology, space technology, forms of artificial intelligence, force multiplier developments, biochemistry, genetic engineering, and superconductivity will be involved.

Other areas can be perceived only dimly at present and many others will inevitably emerge with the explosion of technology. New areas would require new rules, norms and principles of behaviour and would demand higher ethical standards at the level of the scientific community and policy-makers. It is the intent and not the technology that is of core concern. It is a sobering realisation that all weapons technology and weapons systems begin with the postulating of an idea. Unrestrained human ingenuity does the rest. Only watchfulness and collective action can restrain the dangerous escalatory technological spiral. We share a common future and must demonstrate a common determination to give science and technology a human face.

- Although no comprehensive, independent and sustained consideration has been given to the qualitative arms race, the area has not been without effort or result. We can draw comfort from the fact that we have proved ourselves capable of exercising wisdom in the past. The ABM Treaty, the biological weapons convention, the sea-bed Treaty, the convention on chemical weapons being negotiated in the Conference on Disarmament, efforts to reach an agreement on radiological weapons and the nuclear-freeze campaign all express in different ways concern at unwanted directions that the qualitative arms race may take as well as a determination, by mutual or multilateral agreement, to deny their inevitability.
- Not only are decisive containment and eventual cessation of the qualitative arms race aspects to be considered in preventing deterioration of the security environment but there must also be a recognition of the illusory nature of reliability and security provided by the weapons themselves. Tomorrow's weapons will be more subtle, more threatening, and less verifiable and they will allow for shorter response times. Their development does not enhance security even for the States deploying them but rather reduces it and diminishes the interventionist and discretionary human role. The issue pertains as much to self-interest as to collective interest.
- The approaches indicated would differ, depending upon the area under focus. These could include, as appropriate, agreement not to pursue particular potentialities (for example, biological weapons), special agreements on specific sectors (for example, space), a quantitative approach (for example, freeze and ceilings), arrangements to introduce transparency and open systems and the like. As it is difficult to define a budding technology as primarily military or civilian, restraint agreements offer a good model. The distinction between "spent" and "mature" technologies is pertinent. The requirement of openness is implicit in the question of modalities.
- Highlighting the dangers of the qualitative aspect should not have the effect of legitimising conventional weapons, which are also being made more lethal and accurate. Qualitative and quantitative approaches do not represent an either/or kind of proposition. Pursuit of the qualitative dimension is only part of the challenge of disarmament as a whole.
- Scientific and technological developments can also put existing treaties under strain, thus threatening to erode advances already registered. Such a consequence must be prevented.

- A qualitative arms race pertains both to enhancement and refinement of weapons systems, which alter their essential and recognizable attributes, for example through a subsequent generation or tier of development, and to expansion of the arms race into new sectors and areas, which could transform or have far-reaching implications for the security environment. An awareness of possible and likely developments in both areas should be a matter for global concern.
- It would not be possible to attain meaningful net advancement in the cause of disarmament, despite the strenuous efforts put forth in that direction, if the qualitative arms race were not effectively contained and capped with a view to securing lasting and permanent gains in the field of disarmament. An open-ended potential in armaments development and deployment will undermine the value of current disarmament initiatives.
- In view of the continuous and progressive nature of the issue, any monitoring mechanism would need to be of a multi-disciplinary and continuous nature.
- The problem of the qualitative arms race is a global challenge and transcends East-West, North-South, "offensive", "defensive" or any other limiting context.
- Apart from the negative impact of the qualitative arms race on security doctrines and the security environment, the practical dimension of verifiability, which is already a complex issue, will be beyond reach, thus making arms agreements impossible to conclude with any degree of confidence or conviction.
- It should be recognized that research and development programmes are often devised to keep teams together, for once they are broken up it becomes difficult to reassemble them. In devising continuing research programmes the central consideration is the technical challenge involved. This challenge should be increasingly converted to civilian and peaceful areas of research.
- Confidence generated by greater transparency will improve the prospects for the transfer of technology on mutually acceptable terms, with consequent economic benefits to all partners.

The importance of both political policy-makers and the political audience should not be seen as secondary because of over-emphasis on the scientific and technical nature of the subject matter. Ultimately, decisions will be of a political nature and the responsibility of political statesmanship will be the key determinant in shaping perspectives

and policies. However, political decisions are subject to viable approaches developed by technocrats. The endeavour thus involves the active partnership of both.

The ultimate objective of the world community is to usher in a peaceful and non-violent world order which would have removed the seeds of conflict. Attainment of this objective and continuation of the qualitative arms race are incompatible.

Meaningful progress in the collective dialogue and multilateralism expressed in checking the qualitative arms race would reinforce the spirit of enlightened globalism urgently required in other areas to overcome the economic, social and environmental challenges confronting the world.

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Measures to Promote International Peace and Security

Promotion of international security requires the commitment of and active participation of all nations. It requires more extensive adoption of security measures designed to be co-operative in their approach rather than to secure unilateral advantage. Recognising that in present international circumstances States have no option but to make their own arrangements for defence, the Group of Experts considers that in making such arrangements it is important for States to take proper account of their implications for the security of other countries. This chapter discusses steps that are considered by the Group to be of particular importance in the promotion of a co-operative approach to international peace and security.

A. STRENGTHENING THE ROLE OF THE UNITED NATIONS FOR INTERNATIONAL PEACE AND SECURITY

1. General

The United Nations has made substantial contributions to international security, the codification of basic principles that should govern international relations, the observance of international law, economic and social development, issues of arms limitation and disarmament, the process of decolonisation, the struggle against the evil system of *apartheid*, the elimination of racial discrimination, the observance of basic human rights and fundamental freedoms, etc. The General Assembly has adopted by consensus a number of important documents, such as the Declaration on the Granting of Independence to Colonial Countries and Peoples (resolution 1514 (XV) of 14 December 1960), the Declaration on Principles of International Law concerning

Friendly Relations and Co-operation among States in accordance with the Charter of the United Nations (resolution 2625 (XXV) of 24 October 1970), the Definition of Aggression (resolution 3314 (XXIX) of 14 December 1974), etc. Special sessions of the General Assembly have been held to discuss disarmament: in 1978 at the tenth special session, the first devoted to disarmament, the General Assembly adopted the Final Document, which was reaffirmed in 1982 at the twelfth special session. Special sessions of the General Assembly have also been held to consider other major issues such as the establishment of a new international economic order.

As stated in the Charter, the maintenance of international peace and security is one of the main purposes of the United Nations (Art. 1). The Charter provided the Security Council with a mandate to take action with respect to threats to the peace, breaches of the peace, and acts of aggression (Chap. VII). In practice, however, it has not been possible to develop the United Nations collective security system to prevent or counter aggression effectively. In particular there have been numerous occasions when the permanent members of the Security Council have failed to reach agreement on such matters.

Although humanitarian and peace-keeping operations have been of great importance, they have only had a limited impact on the larger needs of international security. With respect to peace-keeping and settlement of international disputes, serious obstacles have been encountered.

International security requires that the gap between the collective security system envisioned for the United Nations in its Charter and its present limited role be bridged. Efforts to implement the security functions of the United Nations in accordance with the Charter require a realistic approach. Collective security can be upgraded, but only under circumstances in which consensus can be reached among the permanent members of the Security Council.

2. Observance of the Charter of the United Nations

The basic principles contained in the Charter are not only legal rules and norms for international conduct among Member States, but are also recognized as principles of international law applicable to all States. All States that have become members of the United Nations are obligated to fulfil the provisions of the Charter. Some of the most important of these principles include:

- (a) Peaceful settlement of international disputes (Art. 2, para. 3);
- (b) Non-use of force: States shall refrain from the threat or use of

force against the territorial integrity and political independence of any State, or in any other manner inconsistent with the purposes of the United Nations (Art. 2, para. 4);

- (c) Non-intervention: States shall not intervene in the affairs of other States; this follows from the prohibition of the use of force, the obligation to respect the principle of equal rights and self-determination of peoples (Art. 1, para. 2);
- (d) The principle of sovereign equality of States (Art. 2, para. 1)
- (e) Territorial integrity: States shall respect the frontiers and territorial integrity of other States (Art. 2, paras. 1 and 4);
- (f) Fulfilment in good faith of the obligations assumed by Members in accordance with the Charter (Art. 2, para. 2).

Too often, the use of force is claimed to be in self-defence. The Charter in Article 51 recognizes the right to self-defence only when "an armed attack occurs". The provisions of Article 51 concerning action to maintain or restore international peace in case of armed attack should be strictly adhered to.

It is obvious that if these fundamental rules of the Charter were upheld by all members of the international community it would lead to a drastic improvement of the security of individual countries and an improvement of the international situation. It is vital for the maintenance of international peace and security that States strictly follow the fundamental rules of the Charter of the United Nations.

3. Full Utilisation of the Existing Collective Security System of the United Nations

The United Nations machinery for collective security, if better utilized, could greatly improve international peace and security. The effectiveness of the Organisation depends first and foremost upon the readiness of Member States to fulfil their obligations under the Charter, to co-operate and to seek agreed solutions especially when the maintenance of international peace and security is at stake. Their political will to use the potential of the collective security system is essential for its function. Particularly, the absence of co-operation among the major Powers has often made it difficult for the United Nations to fulfil the role of maintaining international peace and security in the manner envisaged in the Charter. There have also been occasions when issues have not been brought before the Security Council early enough to avert the outbreak of military conflict. On a number of occasions the Security Council has been unable to act to bring conflicts

to an end. In a number of cases, the Security Council failed to adopt measures because of the lack of concurring votes of the permanent members. Moreover, several duly adopted decisions of the Security Council concerning the maintenance of international peace and security remain unimplemented. The effectiveness of the collective security system needs to be improved, so that States will not be discouraged from turning to the Security Council for a solution of their security problems.

(a) Role of Security Council and Secretary-General

The strengthening of the United Nations depends to a large extent upon the effectiveness of the Security Council, which is primarily responsible for the maintenance of international peace and security and whose decisions should be carried out without fail by all Member States. Therefore, strengthening the role of the Security Council and effective implementation of its decisions is central to the whole structure of the United Nations in its responsibility for international peace and security under the Charter.

The Council was intended to act as the supreme organ of a world-wide collective security system and for this purpose it was vested with the power to make decisions binding upon Member States. Yet, too often at moments of crisis or conflicts threatening the peace of the world, the Security Council has been by-passed by events.

Periodic meetings of the Security Council are provided for in the Charter of the United Nations in Article 28, paragraph 2. The Provisional Rules of Procedure of the Security Council, which seek to implement this provision of the Charter, stipulate that periodic meetings of the Security Council shall be held twice a year, at such times as the Security Council may decide (rule 4). That provision has never been fully utilized. The first and so far only such meeting took place in October 1970.

The Security Council should consider holding periodic meetings in specific cases to examine and review outstanding problems and crises, thus enabling the Council to play a more active role in preventing conflicts. The international situation requires an effective Security Council and, to that end, the Security Council should examine mechanisms and working methods on a continuous basis in order to enhance its authority and enforcement capacity in accordance with the Charter.

The Council should consider the possibility of organising some of its meetings outside the United Nations Headquarters (Art. 28, para.

3). Another possibility might be to hold some of the periodic meetings outside Headquarters.

For its part, the Security Council in the future could do more to deal with potentially dangerous situations through measures that can have a restraining influence. A broader use of peace-keeping forces in accordance with the Charter might be contemplated in the future by the Council, where their presence, with the consent of the parties, might help to prevent the outbreak of hostilities.

Early warning is an essential element for preventive action, but there must also be the readiness to act time. Early notification by and the resources to undertake preventive measures in the Secretary-General to Member States of impending danger will do no good unless members of the Security Council are prepared to join forces in a decisive effort to prevent conflict. It is of greatest importance that members of the Security Council show readiness to take and persevere in preventive measures.

Since the Second World War the developing world has been the stage and indeed the victim of almost all armed conflicts, many of which might have escalated to situations dangerous for world security. Many of these conflicts have tended to be drawn into the East-West context, which has sometimes led to the exacerbation of these conflicts themselves and East-West tensions. In many of these conflicts no vital great Power interest has been directly at stake. However, because of lack of agreement between the permanent members of the Security Council no action has been taken to deter or resolve these conflicts.

In order to facilitate and make possible the effective implementation of the collective security system of the Charter it is important that a co-operative relationship be established among the permanent members of the Security Council as well as between them and the non-permanent members. It is necessary that the permanent members of the Security Council should use all opportunities to co-operate in supporting collective security action by the Council. If disputes that might develop into armed conflicts were identified at an early stage, it would enhance the possibilities to take effective action to prevent the outbreak of hostilities and to settle the disputes by peaceful means. Such steps could initiate a wider use of the collective security machinery of the United Nations in accordance with the Charter.

Members of the United Nations have agreed to accept and carry out the decisions of the Security Council in accordance with the Charter (Art. 25) Failure on the part of Member States to implement decisions

of the Security Council constitutes a violation of their Charter obligations. Furthermore, all Members are required to give the United Nations every assistance in any action it takes in accordance with the Charter of the United Nations and should not assist any State against which the United Nations is taking preventive or enforcement action (Art. 2, para. 5).

According to the Charter, the Secretary-General may bring to the attention of the Security Council any matter which in his opinion may threaten the maintenance of international peace and security (Art. 99). This is an important provision, which the Secretary-General should use whenever possible, with the full understanding and support of the Security Council, particularly its permanent members.

The Secretary-General can play a very useful role through "quiet diplomacy". This may help to defuse potentially explosive situations or help to identify opportunities for resolving conflicts, and possibly improve communication between parties to a conflict. The Secretary-General should keep the Security Council informed of these efforts.

(b) Role of the General Assembly

The General Assembly, the forum in which all Members of the United Nations are represented according to the Charter, may discuss any questions relating to the maintenance of international peace and security and, except as provided in Article 12, may make recommendations to the State or States concerned or to the Security Council or to both. Except in cases where the Security Council is exercising its functions, the General Assembly in fulfilling its functions for the maintenance of international peace and security could consider initiating consultations with a view to bringing together parties to a dispute for beginning or securing negotiations, making recommendations for the peaceful settlement of disputes, promoting as much as possible the elaboration of such decisions on a very wide basis, so as to encourage their adoption by consensus.

4. Role of the United Nations in the Field of Disarmament

The arms race and in particular the threat of nuclear war concern the security of all nations. All the peoples of the world have a vital interest in the success of disarmament negotiations. Consequently, all States have the duty to contribute to efforts in the field of disarmament. All States have the right to participate in disarmament negotiations. The United Nations is the forum where all nations have the opportunity to contribute to the process of disarmament deliberations and negotiations.

The United Nations offers four areas for the promotion of disarmament. First, it provides a unique public forum, in which proposals can be articulated and debated, the members of the world community can press their views and concerns, and the need for disarmament measures can be brought clearly before the world community. Second, the United Nations can in some areas contribute to the implementation of arms limitation agreements. Third, the United Nations can serve as a major source of information and ideas through studies and research conducted by relevant organs in support of disarmament activities, including the United Nations Institute for Disarmament Research. Fourth, a multilateral disarmament negotiating forum, the Conference on Disarmament at Geneva, has been created with broadly representative participation in a negotiating process that concerns the interests of all nations and peoples.

The role of the United Nations in promoting the cause of disarmament should be strengthened. These efforts should aim at mobilising the will of all States to use fully the existing institutional arrangements as well as other appropriate arrangements to be agreed upon by all Member States.

The close relationship between disarmament and development has been recognized by the General Assembly. The release of resources by the achievement of disarmament measures could do much to promote the economic and social development of all nations and assist in relieving the difficulties arising from the economic gap between developed and developing countries.

5. Role of United Nations in Peaceful Settlement of Disputes

Instead of resorting to armed force, States are obliged under the Charter of United Nations to settle their disputes by peaceful means (Art. 2, para. 3). They should, first of all, seek a solution by negotiation, inquiry, conciliation, arbitration,) judicial settlement, resort to regional agencies or arrangements, or other procedures of their own choice (Art. 33). The means would be selected according to their interest and to the nature and importance of the difference. Alternatively, States can refer a dispute to a regional system of peaceful settlement or apply any other provisions contained in existing treaties between the parties in conflict. They can also submit the difference to the different organs for peaceful settlement of disputes established in the Charter of the United Nations.

The Secretary-General may bring to the attention of the Security Council any difference between nations that could threaten the

maintenance of peace and security. Also, any Member of the United Nations may bring to the attention of the Security Council or the General Assembly any dispute or situation that is likely to endanger the maintenance of international peace and security. The Security Council shall, when it seems necessary, call upon the parties to settle their disputes by such means. Subject to the provisions of Articles 11 and 12 of the Charter, the General Assembly may recommend to the parties methods of pacific settlement deemed appropriate for the conflict.

If any State is reluctant to submit a conflict to the appropriate methods of peaceful settlement and the Council deems that the continuance of that situation is likely to endanger the maintenance of peace and security, it can recommend the terms of settlement as it may consider appropriate. In such cases the Security Council should also take into consideration that legal disputes should, as a general rule, be referred by the parties to the International Court of Justice in accordance with the provisions of the Statute of the Court.

The Statute of the International Court of Justice (Art. 36, para. 2) provides that States Parties to it may declare that they recognize the jurisdiction of the Court in all legal disputes concerning specified cases as compulsory *ipso facto* and without special agreement in relation to any other State accepting the same obligation. It is important that this possibility be borne in mind and considered by States.

Future treaties and other international agreements among States should, wherever possible, include procedures for the settlement of disputes that may arise out of the implementation of the terms of such agreements and treaties.

For the protection of the security of weaker countries, among the methods for peaceful settlement of disputes those that provide for third party settlement, such as arbitration or reference to the International Court of Justice, could be of value. Such procedures would enhance the important principle of equality between States in international relations. Commissions of inquiry and consultation, peace observation commissions, and registers of experts for fact-finding or arbitration are among means available especially in the settlement of regional disputes.

6. Improved Capabilities for Peace-keeping

All peace-keeping operations so far have been arranged after hostilities have broken out. A broader use of peace-keeping forces

might be contemplated in the future by the Council in accordance with the principles of the Charter of the United Nations. The possible use of peace-keeping operations as a fire-break to preclude the outbreak of armed conflict should be considered. There might be some situations in which introduction of a military force authorized by the Security Council could contribute to the prevention of a conflict.

In the light of past experience, it is clear that all peace-keeping operations must have a clearly defined and operationally feasible mandate. Full support from the Security Council is crucial for the success of peace-keeping operations and for the willingness of States to provide peace-keeping forces. Consent must be obtained from the parties to a conflict; they must be ready and willing to co-operate with the peace-keeping force in discharging its mandate.

Financial considerations are also an important factor. Of particular concern in this respect is the financial burden of peace-keeping operations placed on troop-contributing countries.

7. Regional Approaches to Maintenance of International Peace and Security

Under the Charter of the United Nations, regional arrangements have been developed for dealing with regional problems through regional actions in various parts of the world. The United Nations should encourage such actions. This question is dealt with under section F of this chapter.

8. Threats to International Security Arising Out of Breaches of International Conventions and Covenants on Human Rights

Over the years the international community has adopted a set of conventions and covenants on human rights. It is imperative to have universal adherence to these instruments and to ensure their strict observance by all States. Any massive and systematic violation of the provisions of these instruments is likely to exercise a negative influence on international security as a whole. All efforts should be exerted by the international community to prevent such developments from occurring.

It must be stressed that the non-adherence of a State to these instruments does not relieve it of the duty to respect their provisions in so far as they emanate from the Charter of the United Nations and other agreed principles of international law. In cases of developments

that threaten international peace and security, the Security Council has the power to investigate such situations according to Article 34 of the Charter. Furthermore, the General Assembly may discuss any questions or any matters within the scope of the Charter and may make recommendations to the Members of the United Nations or to the Security Council (Art. 10).

For their part, in the field of human rights and fundamental freedoms, the States participating in the Conference on Security and Co-operation in Europe have undertaken to act in conformity with the purposes and principles of the Charter of the United Nations and with the Universal Declaration of Human Rights and to fulfil their obligations as set forth in the international declarations and agreements in this field, including, *inter alia*, the International Covenants on Human Rights, by which they may be bound (Principle VII of the Final Act adopted at Helsinki on 1 August 1975).

9. Elimination of Colonialism and the System of Apartheid

Over the last four decades, nationalist movements all over the world, with the active assistance of the United Nations, achieved great success in the field of decolonisation, leading to the independence of many countries. However, despite this achievement, some territories still remain under colonial domination. These colonial situations constitute a denial of the right to self-determination and some threaten international peace and security.

Of particular international concern in this regard is the situation prevailing in Namibia. South Africa persists in its occupation of Namibia in contravention of resolutions of the Security Council and the General Assembly, as well as the 1971 determination of the International Court of Justice declaring such occupation illegal. Two dimensions of this colonial problem have seriously undermined international peace and security. Firstly, within Namibia itself, South Africa maintains a vicious system of colonial oppression through a massive military build-up. Secondly, South Africa has used the territory of Namibia as a springboard to launch aggression and other acts of destabilisation against neighbouring independent States. South Africa's continued illegal occupation of Namibia and its campaign against neighbouring States have therefore constituted aggression, breaches of the peace and threats to international peace and security, within the meaning of the Charter.

Closely associated with colonial oppression and domination are the phenomena of racism and racial discrimination. While in the course

of history various forms of racial discrimination have led to international conflicts, the institutionalized racist system of *apartheid* practised by the South African regime has very serious implications for international peace and security. *Apartheid*, which has been condemned as a crime against humanity, has been made punishable under the Convention on the Suppression and Punishment of the Crime of *Apartheid*. The Security Council has adopted an arms embargo against South Africa (resolution 418 (1977)). This embargo, which is the only United Nations sanction in force, should be rigorously and effectively implemented. The situation within South Africa continues to become more explosive. Externally, South Africa has repeatedly unleashed military aggression, political destabilisation and economic sabotage against neighbouring and other African States. The threat South Africa poses to its neighbours has been compounded by its nuclear capability.

The dangers to international peace and security arising from colonialism and apartheid require resolute and concerted international action. In the particular case of Namibia, it is incumbent upon the United Nations to take urgent measures for the early independence of Namibia in accordance with Security Council resolution 435 (1978) and the United Nations Plan for Namibia. Similarly, the eradication of *apartheid* should remain a high priority for the international community. To that end, there is need to adopt comprehensive mandatory sanctions against South Africa. Furthermore, all States should terminate acts of collaboration with South Africa as this only strengthens the South African regime and consolidates the evil system of *apartheid*.

B. MEASURES TO AVOID NUCLEAR WAR

Nuclear weapons pose the greatest danger to mankind and to the survival of civilisation. Effective measures to promote nuclear disarmament and to prevent nuclear war must have the highest priority. To this end, it is imperative to remove the threat of nuclear weapons, to halt and reverse the nuclear arms race and to prevent the proliferation of nuclear weapons. At the same time, other measures designed to prevent the outbreak of nuclear war and to lessen the danger of the threat or use of nuclear weapons should be taken, bearing in mind that such a danger can be removed only through the total elimination of nuclear weapons. In this context it is important to note that the principle of non-first-use of nuclear weapons has already been declared unilaterally by two nuclear-weapon States. The other

nuclear -weapon States have declared that they would use nuclear weapons only in response to an attack.

The Charter of the United Nations is the highest expression of international law. Full respect for and observance of the Charter as well as observance of the whole body of international law would promote international security. That part of international law that is applicable in armed conflicts contains a number of principles that are relevant to military planning and the formulation of strategic doctrines. If it were known that international humanitarian law of armed conflict were fully respected by all, potential adversaries would more easily trust each other's commitment never to use force in a manner inconsistent with the Charter of the United Nations. International humanitarian law has been elaborated over decades to apply to conventional methods of warfare. Traditional international law relating to armed conflict contains some general principles that in fact outlaw certain practices in war. Relevant in this context are, *inter alia*, the principles of distinction between military and civilian objects, the prohibition of causing unnecessary suffering in warfare, and the principle of proportionality prohibiting attacks that would be excessive in relation to the concrete and direct military advantages anticipated. Nuclear weapons have introduced a completely new and qualitatively different dimension. It is not conceivable that nuclear weapons could be used in a manner consistent with the principles mentioned above. Further efforts should be made to include in international law the clear and complete prohibition and total destruction of all nuclear weapons, as well as the clear and complete prohibition on the development, testing, production, stockpiling and use of nuclear weapons.

While the final objective of the efforts of all States should continue to be general and complete disarmament under effective international control, the immediate goal is the elimination of the danger of a nuclear war and nuclear disarmament. In carrying out this task, all the nuclear-weapon States, in Particular those that possess the largest nuclear arsenals, bear a special responsibility.

All over the world, growing apprehensions have been expressed in recent years regarding the dangers caused by the nuclear arms race, as evidenced in particular by the advent of vocal anti-nuclear movements in Europe, North America and elsewhere. The intervention of the peace movement in the international debate over arms issues is an index of the increasing world-wide concern over the dangers inherent in the unabated nuclear arms race.

Although some treaties have been negotiated concerning the qualitative as well as quantitative aspects of offensive strategic weapons that prohibit the deployment of nuclear weapons in certain areas, limit missile defences and restrict the testing of nuclear weapons in certain environments, the threat posed by nuclear weapons has grown more ominous than ever before.

Even during the 1970s, when there was progress in arms negotiations, technology outpaced negotiations. During the past few years, the hiatus in progress towards arms limitation has permitted weapon programmes on both sides to gain a momentum that is threatening to raise unprecedented problems of instability in crises and war. Some recent improvements in the capabilities of nuclear-weapon systems that are already deployed, and developments in military technology that may extend the arms race into outer space, undermine strategic stability and increase the danger of nuclear war.

All States, in particular nuclear-weapon States, should consider various proposals designed to secure the avoidance of the use of nuclear weapons, and the Prevention of nuclear war. In this context, while noting the unconditional assurance made by China, and the declarations by France, the Soviet Union, the United Kingdom and the United States, efforts should be pursued to conclude, as appropriate, effective arrangements to assure non-nuclear-weapon States against the use or threat of use of nuclear weapons.

The concept of nuclear-weapon-free zones is of long standing. However, over years technological advances have resulted in weapon delivery systems that might make any country vulnerable. Nevertheless, by providing assurances by the nuclear-weapon States not under any circumstances to use or threaten to use nuclear weapons against States that have chosen not to acquire or to allow the deployment of nuclear weapons on their territories, and by eliminating the possibility of regional nuclear arms races, nuclear-weapon-free zones would represent an important contribution to regional confidence and security-building in lessening the threat of nuclear conflict. The General Assembly has concluded that the establishment of nuclear-weapon-free zones on the basis of arrangements freely arrived at among the States of the region concerned constitutes an important disarmament measure. The first, and as yet only, formally established nuclear-weapon-free zone in a densely populated area was created under the terms of the Treaty for the Prohibition of Nuclear Weapons in Latin America. Nuclear-weapon-free zones have also been proposed,

in the United Nations and elsewhere, for the Middle East, the Mediterranean, the South Pacific, South Asia, Central Europe, the Balkans and the Nordic area. In Africa, the Declaration on the denuclearisation of that continent has not been realized because of the nuclear capability of South Africa. For various reasons, however, none of the proposals referred to has been implemented. Such proposals will have to take into account the specific characteristics of each potential nuclear-weapon-free region. Special arrangements in accordance with the norms of international law would be necessary if areas of international sea were intended to be included in a nuclear-weapon-free zone. As an interim measure, individual States might wish to pledge not to become the first to introduce nuclear weapons into a region. Both such interim arrangements and, in some regions, more formal arrangements for the prohibition of nuclear weapons could represent important contributions both to world and regional security.

The existence in both the North Atlantic Treaty Organisation (NATO) and the Warsaw Treaty Organisation of a large number and variety of strategic and tactical nuclear weapons to complement their conventional defences increases the danger that if a conventional war were to start in Europe, it could easily escalate into a full-scale nuclear war.

In the perspective of NATO, nuclear weapons offer one means of compensating for the perceived imbalance in European conventional force levels. NATO has sought to secure itself from attack by threatening to counter any such attack with nuclear weapons. The Soviet Union, for its part, rejects that there exists an imbalance in conventional forces in Europe and has pledged not to be the first to use nuclear weapons. It has declared that in responding to an attack it would use all its military power.

Battlefield nuclear weapons, in particular, raise important problems of stability, creating pressures for their early use in battle. Their location near the front lines of any war would mean that political leaders may face a choice early in any conflict of either authorising the use of battlefield weapons or watching them being overrun. Security for both sides would be improved if these nuclear weapons were further reduced in number and withdrawn from the front lines. The strategic concept of "limited nuclear war" should be abandoned since it is unlikely that a nuclear war could be limited or controlled to a certain level without escalating to a total nuclear war.

With respect to the two major nuclear Powers, the United States and the Soviet Union, there are steps that could be taken to improve

their ability to communicate with one another in order to avoid the unfolding of situations in which actions and reactions through misperceptions or misjudgement could lead to a greater risk of conflict. Those steps could also bring a crisis, once it develops, under control.

The recent agreement to upgrade the United States-Soviet "Hot Line" is a useful step. Other ideas have been proposed to improve communications and build confidence between the two leading military Powers. Separate negotiations specifically for these types of measure, in which progress would not be dependent upon progress in the politically more sensitive talks on the size and characteristics of nuclear arsenals, might prove a more effective means to reducing super-Power tensions and building confidence.

C. NEGOTIATIONS AND EFFECTIVE MEASURES FOR ARMS LIMITATION AND DISARMAMENT

For more than a decade, there have been no negotiations leading to a treaty on general and complete disarmament. Disarmament has become an imperative and most urgent task facing the international community. Together with negotiations on nuclear disarmament measures, negotiations should be carried out on the reduction of armed forces and of conventional armaments, based on the principle of undiminished security of the parties with a view to promoting or enhancing stability at a lower military level, taking into account the need of all States to protect their security. These negotiations should be conducted with particular emphasis on armed forces and conventional weapons of nuclear-weapon States and other militarily significant countries. There should also be negotiations on the limitation of international transfer of conventional weapons, based in particular on the same principle, and taking into account the inalienable right to self-determination and independence of peoples under colonial or foreign domination and the obligations of States to respect that right, in accordance with the Charter of the United Nations and the Declaration on Principles of International Law concerning Friendly Relations and Co-operation among States, as well as the need of recipient States to protect their security.

A measure that would contribute to the curbing of the arms race and would increase the possibilities of reallocation of resources now being used for military purposes to economic and social development, particularly for the benefit of the developing countries, would be gradual reduction of military expenditures on a mutually agreed basis.

All the peoples of the world have a vital interest in the success of disarmament negotiations. Consequently, all States have the right and the duty to participate on an equal footing in multilateral disarmament negotiations that have a bearing on their national security. While disarmament is the responsibility of all states, the nuclear-weapon States have the primary responsibility for nuclear disarmament and, together with other militarily significant States, for halting and reversing the arms race. It is therefore important to secure their active participation.

The negotiations on a comprehensive nuclear test ban should be resumed and intensified. Nuclear weapons testing has played an indispensable role in the development of the nuclear weapons programs of the great Powers. According to the Stockholm International Peace Research Institute (SIPRI) since 1945 some 1,500 nuclear tests have been conducted, over 90 per cent of them by the two leading nuclear-weapon Powers.

A Partial Test Ban Treaty was concluded in 1963 prohibiting nuclear-weapon testing in the atmosphere, in outer space and under water, but it does not prohibit testing underground and therefore has not curbed the qualitative improvement of nuclear weapons. In 1974, the Soviet Union and the United States reached agreement on a Threshold Test Ban Treaty that restricts underground explosions at nuclear test sites to an explosive yield below 150 kilotons. In 1976, the Peaceful Nuclear Explosions Treaty placed a similar restriction on explosions at locations other than test sites. While neither of these treaties has yet been ratified, the signatories have indicated their intentions of abiding by their terms.

Proposals for a comprehensive test ban have been discussed in a variety of multilateral and bilateral forums for more than two decades, with considerable progress but, so far, no final result. Among the factors at issue, according to certain States, have been the question of verification, compliance with a total ban and the argument that some testing is necessary to maintain confidence in the reliability of existing nuclear stockpiles. Others considered that such arguments were only attempts to avoid the formulation and conclusion of a comprehensive test ban treaty, since they considered that no such technical obstacles exist.

Even with the existence of a comprehensive nuclear-test ban, nuclear weapons might still be built but the confidence in untested weapons would necessarily be low. The same would gradually apply to

the reliability of stockpiles of older tested types of weapons. At the same time, a prohibition on future tests would retard the nuclear programmes of the existing nuclear States by effectively limiting qualitative improvements resulting from new designs for warheads. A comprehensive test ban might thus help restrain both horizontal and vertical proliferation of nuclear weapons.

The conclusion of a comprehensive test ban would be a clear signal to non-nuclear-weapon States that the nuclear-weapon States had taken seriously the undertaking made in the 1968 Treaty on the Non-Proliferation of Nuclear Weapons to move towards nuclear disarmament. If the nuclear-weapon States demonstrate a serious interest in halting the vertical proliferation of nuclear weapons, this example might encourage restraint on the part of non-nuclear-weapon States and their agreement to tightened safeguards. In the absence of progress in negotiations leading towards arms reduction or towards a comprehensive test ban treaty, there is a risk that pressures will mount against the non-proliferation regime established in the Treaty of 1968. Among the States Parties there is a widespread view that a comprehensive test ban has world-wide significance as an indicator of the seriousness of the nuclear-weapon States parties to the Non-Proliferation Treaty in pursuit of their obligations under the Treaty.

At the present time, the relationship in strategic arms between the Soviet Union and the United States is governed by treaties within the framework of the SALT process, in particular by the 1972 Treaty between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems (ABM Treaty) (SALT I) and the 1979 Treaty between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Strategic Offensive Arms (SALT II), which has not yet been ratified. Both sides have declared their commitment to abiding by the provisions of these treaties. By SALT I and SALT II ceilings were placed on the aggregate number of land-based and sea-based ballistic missile launchers and bombers on the two sides, as well as sub-ceilings on certain types, and certain combinations of types, of such weapons. They also placed restrictions on certain characteristics of the two Parties' long-range missiles and bombers, as well as some restrictions on the modernisation of existing weapon systems and the means that otherwise could be used to conceal their existence.

Negotiations during the SALT process, which began in 1969, have been arduous and difficult politically, and progress has often been

painfully slow. Still, in an historical context, the very fact of negotiations on this subject was widely viewed as a positive sign. Never before have two States devoted so much effort, for so long a period of time, in an attempt to restrain military forces believed to be central to their national security.

At the same time the results of arms limitation talks have not matched the expectations of world public opinion or satisfied the proponents of the negotiating process. Indeed, since 1969, when the talks began, the number of bombs and warheads deployed by the two sides in their strategic forces has increased at an alarming rate, largely as a result of the introduction of multiple warheads on missiles. Determined efforts for drastic reduction of nuclear arsenals are urgently needed.

The bilateral negotiations that began in Geneva in 1985 have as their agreed subject a complex of questions concerning space and nuclear arms, both strategic and intermediate range, with all the questions considered and resolved in their interrelationship and as their agreed objectives to work out effective agreements aimed at preventing an arms race in outer space and terminating it on earth, and limiting and reducing nuclear arms and at strengthening strategic stability.

The United States and the Soviet Union have certain shared interests. Pre-eminent among these common interests is the avoidance of nuclear war. Neither society faces any greater danger to its security and even its survival. Consequently, this one shared key objective should be the dominant guideline for negotiations, thus maximising the prospects for mutual co-operation and reducing political conflicts.

Today, the world finds itself on the verge of a major arms race in outer space. A particularly beneficial step would be the prevention of the development of space weapons. The 1972 Treaty on the Limitation of Anti-Ballistic Missile Systems must be upheld. It undoubtedly represents the signal accomplishment of 15 years of negotiations to limit the growth of nuclear weapons and to lessen the risk of war.

In agreeing to the above Treaty, the two major nuclear Powers have precluded for all practical purposes the deployment of ballistic missile defence systems capable of protecting large areas, and have assured that they would each remain vulnerable to nuclear-armed missile attack. This, it is believed, makes the risk of either side initiating a war, even in crisis, less likely, and enforces a certain degree of co-operation upon the two nations in situations short of

crisis. By implication, the avoidance of deployments of anti-ballistic missiles may also have had the beneficial consequence of reducing competition in offensive weaponry. Deployments of ballistic missile defence systems would be likely to lead to attempts to overwhelm whatever increment of defensive capability the other was obtaining by deploying even larger increments of offensive striking power.

These developments may portend a destabilising trend by contributing to the perception that the capability to fight and survive a nuclear war may be acquired. At the very least, development of anti-satellite capabilities dampens confidence in the reliability of verification systems and adds a new dimension of uncertainty to the arms race.

So far, the use of space technology has helped to stabilize the nuclear relationship. Satellite-based early warning systems provide the Soviet Union and the United States with capabilities to know of ballistic missile launchings virtually instantaneously. Satellite communications systems permit rapid and reliable communications between political authorities and commanders in the field and have helped reduce dangers of unauthorized or inadvertent use of nuclear weapons. Still other systems that are available to a few countries assist in verifying arms limitation agreements. Such systems would be placed at risk by the existence or development of anti-satellite weapons.

In addition to testing and deploying anti-satellite systems that rely on the use of projectiles, increased attention is devoted to research and development of more advanced space weapons systems, for instance laser-beam weapons and particle-beam weapons, which would further diminish stability and confidence. Therefore, it is urgent that negotiations be pursued leading to effective measures for the prevention of an arms race in outer space before such technological developments become realities. It is important that all States, in particular those with major space capabilities, take immediate measures to prevent an arms race in outer space.

Biological weapons have been completely banned by the Biological Weapons Convention in 1975. The threat of other weapons of mass destruction, in particular chemical weapons, must also be contained. But while the actual use of chemical weapons was prohibited in the 1925 Geneva Protocol no restrictions exist on the development, production and stockpiling of such weapons. Concern has been aroused about the use of chemical weapons. Research and development on new generations of chemical weapons including "binary" chemical munitions

have been intensified. The urgency of a complete ban on chemical weapons is therefore greater than ever. Negotiations within the Conference on Disarmament on this matter were intensified in 1984 and have made some progress. The conclusion of such a treaty would represent an important step forward in the common quest for security.

Arms transfers between nations are not new. As long as war and military preparedness have been features of international relations, weapons have been principal commodities of international trade. Over the past 20 years, however, conventional arms transfers have acquired particularly serious implications as the growth of such transfers indicates. In less than two decades, the total annual value of international arms sales has jumped from \$3.8 billion to over \$30 billion. Moreover, the quantitative increase in arms transfers has been accompanied by dramatic qualitative improvements. Whereas transfers from advanced nations traditionally comprised older weapons, in recent years the transfer or sale of more technologically sophisticated weapons has become commonplace.

Establishing criteria for restraining the flow of arms both quantitatively and qualitatively has been proposed at the United Nations, but not acted upon. However, measures in this regard have already been taken in Latin America where 20 Latin American and Caribbean nations agreed in 1978 to exchange information on weapon purchases with the goal of working toward greater restraints on arms transfers.

The problem of arms transfers is a complex one. Between 1977 and 1979, the Soviet Union and the United States held talks for the purpose of establishing guidelines to limit the transfer of conventional arms. The resumption of talks like these should be considered. Curbing the arms race will require a co-ordinated multinational approach. Moreover, recipient nations might consider the example of the Latin American nations in adopting guidelines to restrain the flow of arms to particular regions. In particular, it is in the interest of nations in every region to bar or limit weapons that will have the effect of enhancing the offensive capabilities of potential adversaries and/or increasing the incentive for pre-emptive action in a time of crisis. The subject of arms transfers, which rouses many concerns, was one of the issues addressed in the Study on Conventional Disarmament carried out by the United Nations (A/39/348).

Whatever political arrangements may be reached, in Europe the continuing competition in both conventional and nuclear forces poses

a serious obstacle to creating an atmosphere of mutual confidence and security. Achieving a rough parity at lower levels of armaments in Europe would serve to diminish tensions on the continent.

The talks on mutual reduction of armed forces and armaments as well as associated measures in central Europe have been going on at Vienna since October 1973. However, no practical results have been achieved at them so far. At the same time, agreement on tangible reduction in the level of military confrontation in the heart of the continent of Europe based on the principle of undiminished security to either side could have a substantive importance for the strengthening of security not only in Europe but throughout the world.

D. IMPLEMENTATION OF DISARMAMENT AGREEMENTS; COMPLIANCE AND VERIFICATION

Disarmament and arms limitation agreements should provide for adequate measures of verification satisfactory to all parties concerned in order to create the necessary confidence and ensure that they are being observed by all parties. The form and modalities of the verification to be provided for in any specific agreement depend upon and should be determined by the purpose, scope and nature of the agreement. Agreements should provide for the participation of parties directly or through the United Nations system in the verification process. Where appropriate, a combination of several methods of verification as well as other compliance procedures should be employed. Whereas 100 per cent verifiability of compliance cannot be expected in most cases, it is necessary that all agreements include co-operative measures and other steps to assure the effective verification of the treaty provisions. However, the elusiveness of perfect verifiability must not be allowed to become an obstacle to further agreements.

Given the vital importance of verification to disarmament, a United Nations capacity to provide this service, if the States concerned so request, could constitute a valuable asset in the implementation of future disarmament agreements. Implementation of the International Atomic Energy Agency's inspection responsibilities under the Non-Proliferation Treaty has been effective in maintaining international confidence that nuclear material, present in peaceful installations covered by the Treaty or other safeguard agreements, is not being diverted for military use. The objectivity of the inspections has never been seriously challenged.

There are several arms limitation treaties that remain unratified and only informally adhered to. Such treaties are the 1974 Threshold Test Ban Treaty, the 1976 Treaty on Peaceful Nuclear Explosions and the 1979 SALT II Treaty. The 1967 Treaty of Tlatelolco, which would make Latin America a nuclear-weapon-free zone, is another treaty that has not been ratified by some of its signatories.

Although signatories have stated their intent to abide by the provisions of most of these agreements, numerous questions have been posed concerning the degree to which they are being observed. Formal ratification of these agreements would set in place various co-operative arrangements incorporated in their texts that would make the assurance of compliance with treaty provisions a less uncertain matter. It is in the interest of not only the signatories but all the world that these agreements be duly ratified.

Compliance with existing treaties by parties to them is a broader problem than that pertaining to unratified treaties. Proven violations of existing arms limitation treaties could not only threaten the purposes implicit in the particular treaty in question, but may also jeopardize the prospects for future negotiations, making it more difficult to motivate and muster popular support for additional and more far-reaching treaties.

The further spread of nuclear weapons to States that do not have them now would be a source of instability adding to the risk of nuclear war. It is in the interest of strengthening peace and security to prevent further vertical and horizontal proliferation of nuclear weapons. The fact that some 125 non-nuclear-weapon States have become Parties to the Non-Proliferation Treaty demonstrates that preventing the spread of nuclear weapons to additional States is seen to be of common security interest. In the task of achieving the goals of nuclear disarmament, all the nuclear-weapon States, in particular those among them that possess the most important nuclear arsenals, bear a special responsibility. Nuclear-weapon State's should make effective arrangements to assure non-nuclear-weapon States against the use or threat of use of nuclear weapons.

The Non-Proliferation Treaty represents an undertaking by non-nuclear-weapon states not to acquire nuclear weapons or other nuclear explosive devices and to accept that the peaceful uses of atomic energy be put under international safeguards and inspection through IAEA. The nuclear-weapon States undertake not to transfer to or assist non-nuclear-weapon States to acquire nuclear weapons or other nuclear

explosive devices and to pursue in good faith negotiations on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament. All States should have access to and be free to acquire technology, equipment and materials for peaceful uses of nuclear energy. The safeguard provisions of the Treaty have been supplemented by arrangements among nations producing nuclear technology and materials to restrict the export of certain items that could be used for the production of nuclear weapons. Some countries maintain that, while serving non-proliferation purposes, these arrangements also represent a supplementary obstacle for the peaceful uses of nuclear energy by some non-nuclear-weapon States.

Since 1964, the number of declared nuclear-weapon States has not increased. Undoubtedly, part of the credit goes to restraints accepted under the Non-Proliferation Treaty or exercised as a result off the norm established by it. Israel and South Africa are widely believed either already to have undeclared arsenals of untested nuclear weapons or to be capable of manufacturing such weapons very rapidly. Certain other States are reportedly pursuing nuclear weapon programmes.

The non-proliferation regime should be strengthened. Many States argue that, by its very nature, the Non-Proliferation Treaty institutionalizes a condition of inequality by obliging non-nuclear-weapon States to forego the nuclear option. To match the self-restraint of the non-nuclear-weapon States, it is imperative that the nuclear-weapon States Parties to the Treaty give meaning to their undertaking under article VI of the Treaty to negotiate an end to the arms race and disarmament. Giving full effect to the provision of article IV with regard to the inalienable right of the Parties to the Treaty to develop research, production and use of nuclear energy for peaceful purposes is also of great significance for a viable non-proliferation regime. The safeguards provided under the Treaty should be further strengthened, taking into account new technological developments, in a manner designed to avoid hampering the economic or technological development of the Parties or international co-operation in the field of peaceful nuclear activities. Effective arrangements to assure non-nuclear-weapon States against the use or threat of use of nuclear weapons would also strengthen non-proliferation.

In this connection, further international co-operation on nuclear non-proliferation to minimize the dangers that the use of nuclear energy for peaceful purposes will lead to the diversion of nuclear materials for weapons purposes should be pursued. Multilateral efforts could be

explored for expanding the safeguards systems of IAEA, *inter alia*, to cover the civilian nuclear fuel cycle of the nuclear-weapon States. Certain regional security arrangements could encourage existing threshold countries to abstain from the nuclear weapon option.

E. CONFIDENCE-BUILDING AMONG STATES

Security depends not only on limitation of arms, but is also a consequence of state of political and economic relations among nations. The two conditions are inseparable. Progress on arms limitation needs to be accompanied by increased co-operation in a variety of areas, including economic, social, scientific and cultural affairs. It also needs to be coupled with efforts to extend a spirit of confidence into military relations. Ideological differences must not be made an obstacle to confidence-building and co-operation in various fields among States.

The potential of confidence-building measures among nations has been suggested by the Conference on Security and Co-operation in Europe. The Conference was established by 33 European signatories, plus the United States and Canada, to reduce tensions and to build on the spirit of detente. It has accommodated a variety of concerns, and its Final Act of 1975 reflected the following principles: (a) sovereign equality, respect for the rights inherent in sovereignty; (b) refraining from the threat or use of force; (c) inviolability of frontiers; (d) territorial integrity of States; (e) peaceful settlement of disputes; (f) non-intervention in internal affairs; (g) respect for human rights and fundamental freedoms, including the freedom of thought, conscience, religion or belief; (h) equal rights and self-determination of peoples; (i) co-operation among States; (J) fulfilment in good faith of obligations under international law. At the level of military relations, the Conference has been instrumental in instituting some important confidence-building measures designed to address the insecurities created by the conduct of large-scale military activities. The specific provisions of the Final Act of the Conference include a commitment to announce major military manoeuvres exceeding a total of 25,000 troops at least 21 days in advance. Other measures agreed to include the exchange of observers at these exercises and other voluntary steps to ease tensions in Europe.

Additional measures are now being discussed at the Conference on Confidence-and Security-Building Measures and Disarmament in Europe, currently being held at Stockholm. In the European context it would be an important achievement if that Conference were to produce

substantial results so as to pave the way for a second stage that should be devoted to concrete disarmament measures.

Approaches and measures regarding confidence-building applicable to other regions of the world and the specific threats prevalent in those regions could also be explored and adopted with a view to improving international relations and thus promote negotiations on arms limitations and disarmament. In this connection, the United Nations may, to a certain extent, take part in such an endeavour. For instance, the United Nations concluded a Comprehensive Study on Confidence-building Measures, and since 1983 this subject has been under consideration by the United Nations Disarmament Commission.

The United Nations has an important role to play in the identification and promotion of agreements on confidence-building measures and their implementation, as recognized in paragraph 8 of the Final Document of the first special session of the General Assembly devoted to disarmament. The United Nations can encourage Member States to consider and enter into negotiations on confidence-building measures. It can also help to establish a political climate in which successful negotiations can be conducted. It plays an essential role in maintaining and strengthening the will of its Member States to negotiate and implement agreements on the application of confidence-building measures. Negotiations on confidence-building measures must, in conformity with paragraph 8 of the Final Document, be based on the strict observance of the purposes and principles enshrined in the Charter of the United Nations.

F. ENHANCING REGIONAL CO-OPERATION

Regional arrangements such as the organisation of African Unity (OAU), the Arab League, the Organisation of American States (OAS) and the Association of South-East Asian Nations (ASEAN) have provided a means of co-ordinating regional political activity and at times of resolving concerns of regional security.

Although there has been some success in the political and economic fields, regional arrangements have not been equally effective for security purposes. Successful peace-keeping efforts by the OAS in the 1969 war between Honduras and El Salvador hint at the possibilities, but so far such examples stand as exceptions. While regional organisations are well placed to define the needs for peace-keeping, they have insufficient means for its implementation. In some instances,

OAU has played an important role in reconciling, mediating and solving local conflicts on the continent.

Urgent measures to strengthen the role of the United Nations should go hand in hand with measures to strengthen regional approaches to security, provided that such arrangements or activities are consistent with the purposes and principles of the United Nations.

Efforts to establish local and regional security arrangements were undertaken to supplement the collective security system of the United Nations. Regional organisations have been formed in various parts of the world and in some cases have attempted to function in peace-keeping roles, though such peace-keeping capabilities of regional organisations so far have been quite limited. Provisions to settle disputes among States by peaceful means are included in several regional treaties and instruments. In some cases permanent institutions have been created. The effectiveness of such arrangements could be enhanced in various ways in conformity with the purposes and principles of the United Nations Charter.

Regional arrangements or agencies dealing with regional security, arms limitation and disarmament and other relevant problems should make a positive contribution to the security and development of co-operation among the States within the region. The United Nations should encourage such efforts. Arrangements and agencies should include all the States of a region and take due account of their security needs and problems. Important beginnings in this regard have already been made.

There may be circumstances in which regional forums outside the framework of the United Nations would provide appropriate vehicles for pre-empting or resolving local problems. Regional organisations may be in a good position to analyze and to propose solutions to conflicts in their area as well as to determine the need for peace-keeping and other measures, but often lack the means to implement them. To capitalize on such opportunities it would be important to strengthen the cohesion of various regional groupings, to consolidate their organisational and economic basis and to ensure that they are properly representative within their respective regions.

Regional diplomacy could help minimize the temptation of parties to local disputes to appeal to Powers outside the region for political support and military assistance, and at the same time could reduce the risks of great Power involvement. The recent experience of the Contadora Group in Central America represents an important effort

to isolate local conflicts from great Power intervention and to find local solutions to local problems.

Regional efforts should be a complement to, not a substitute for, United Nations peace-keeping efforts. The United Nations is well positioned to strengthen the peace-keeping potential of regional organisations. The best route to regional peace might be through collaborative efforts that bring the international resources of the United Nations to the service of regional strategies for peace and conflict resolution. In this regard, the co-operation and co-ordination between the United Nations and the regional organisations should be enhanced in all aspects.

The Conference on Security and Co-operation in Europe at Helsinki, Finland, in 1973 and 1975, and follow-up sessions in Belgrade and Madrid in 1977-1978 and 1980-1983 respectively have demonstrated a versatile and practical approach to formulating policies designed to enhance regional security. The Final Act of the Conference is not a treaty but represents a politically binding commitment among the 35 participating nations to foster security through wider co-operation and sustained dialogue on European issues. Where relevant to other regions, the conference arrangement may offer new possibilities for fostering respect for the territorial integrity of nations, for peacefully settling regional disputes and for enhancing regional economic, scientific and cultural co-operation.

Regional conferences could provide an approach to dealing with security concerns specific to a particular region or subregion. Since participation in a regional conference would have different implications than membership in a formal regional organisation, the conference mechanism might offer the possibility of drawing on wider regional support. Regional meetings would not be limited to matters relating exclusively to military security but could define other non-military aspects of security, including economic and cultural problems. It would also be a vehicle for gaining consensus on adopting other confidence-building measures between States in the region.

G. EFFORTS TO IMPROVE INTERNATIONAL ECONOMIC CO-OPERATION

In the present era, all nations are linked in a complex network of trade, development, energy, raw materials and monetary exchanges. Few nations have escaped from the effects of contemporary international economic crises. The general situation of the world economy is characterized today by monetary, financial and trade

instability that has affected growth and development in most countries. Few countries can retreat behind their borders and hope to escape such factors as the effects on their economy of high interest rates, unstable currency rates, changing costs of energy imports, falling prices of export commodities vital to their economy, rising protectionism and other deteriorations in terms of trade. These economic disruptions have severe effects, particularly on the developing countries. Their efforts towards development have suffered a serious set-back. In Africa, economic and social problems have been aggravated by the prolonged drought, with the consequence that millions of people are exposed to famine. Moreover, such economic disruptions can have negative implications for the political stability of developed and developing nations alike, particularly the small and weak States in many cases, and eventually result in threats to security.

The multilateral financial institutions that were created after the Second World War and are affiliated with the United Nations have performed satisfactorily in the first two post-War decades, at least for some parts of the world, while they still play an important role they are not able to cope adequately with the current crisis nor effectively promote development, with the world more interdependent economically, solutions to the present economic problems can be found only through intensified, multilateral efforts. It is clear that the present crisis is of a structural nature. An international economic system on a sounder footing will strengthen peace, reduce tensions and give new impetus to mutually beneficial co-operation and development. The international economic system needs to be reconfigured for the benefit of all States, especially for the benefit of developing countries.

The current effort to establish a new international economic order is aimed to solve such a problem with a view to bringing about economic justice among nations so as to promote international peace and security. Therefore, the North-South dialogue on the economic relations between the developed and developing countries should be promoted. The United Nations should play a greater role in this field through its various relevant organs and the specialized agencies, including regional economic commissions around the world.

H. NON-ALIGNMENT MOVEMENT

The Non-Aligned Movement has made an important contribution to international security, helping to strengthen the role and security of medium-sized and smaller nations and holding larger nations to account on the critical issues of colonialism and the arms race. A

greater role for the Non-Aligned Movement may exist in the future. Firstly, the Movement may be able to play a more instrumental role in finding peaceful solutions to regional disputes. The potential here is suggested by the contribution of non-aligned nations to peace efforts in South-West Asia and Central America, the last in support of the Contadora Group. Secondly, the Non-Aligned Movement will likely continue to be an effective advocate of racial and political justice, reflecting the commitment of the United Nations to the protection of basic human rights. Thirdly, the Movement has an important role as spokesman for the principles of sovereign equality and territorial integrity of all nations in the international community, also supporting the interests of the United Nations in this role as well. Fourthly, the Non-Aligned Movement can press for needed reforms in the international economic system, seeking greater equality in international trade and access to civilian technologies among nations. Finally as an organisation devoted to the preservation of international peace and security, the Non-Aligned Movement may help to encourage restraint in the nuclear and conventional arms race, and to underscore the critical relationship between disarmament and development. With such an agenda, the non-aligned nations can continue to make a unique and essential contribution to international security.

I. PEACEFUL COEXISTENCE

Many nations suggest that international security and confidence between nations can be promoted on the basis of the principles expressed in the concept of peaceful coexistence. The concept of peaceful coexistence is applicable not only between countries with differing social systems, but also between countries sharing the same social system. When this concept is violated, even nations of similar social system may find themselves in sharp conflict. The urgency of applying the concept of peaceful coexistence has rarely been greater. The 160 and more independent countries of today's world differ widely in all aspects of livelihood, including different ideologies and social systems. Yet, they all face common threats posed by the nuclear and conventional arms race and international economic problems. Respect for peaceful coexistence would help to promote and ensure international security. The possession of nuclear weapons imposes a special responsibility on the nuclear Powers, particularly the two major Powers possessing the largest nuclear arsenals, to respect this concept. In the opinion of its proponents all nations are called upon to, observe this fundamental norm of international behaviour, which in their view is in conformity with the Charter of the United Nations.

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From Collective Self-Defence to a Collective Security System in Europe

The peaceful revolution in Central and Eastern Europe that has been evolving since October 1989 has led to a major turning-point of this century: the Cold War ended in December 1989 and the post-war period came to an end on 3 October 1990 with the completion of German unification. The conflict between "capitalism" and "socialism" and the competition between alternative designs of world order (Wilson vs. Lenin), the organisation of society (democracy vs. democratic centralism) and the economy (market economy vs. socialist command economy) has also come to an end, with the meetings of the Conference on Security and Co-operation in Europe (CSCE), held in Bonn and Copenhagen in April and June 1990, which embraced Western concepts of a market economy and the principles of parliamentary democracy in place of the "communist model". In Europe, the political, economic and military East-West conflict has disappeared, as has the perception of the "threat". As Theodore Sorensen put it in his own words:

"The touchstone for our nation's [the United States] security concept—the containment of Soviet military and ideological power—is gone. The primary threat cited over forty years in justification for most of our military budget, bases and overseas assistance is gone. The principal prism through which we viewed most of our worldwide diplomatic activities and alliances is gone."

The "Long Peace" Hypothesis

In his book *The Long Peace*, John Lewis Gaddis has developed the hypothesis that the absence of war in Europe since 1945 has been due to the bipolar distribution of military power, the approximate military equality between the two Alliances and the fact that each super-Power was armed with a large nuclear arsenal.

In a similar vein, Mearsheimer has indicated that peace in Europe necessitated maintaining the Cold War order and its confrontation because its end "would create more problems than it would solve". His resulting policy recommendations for peace in a multipolar world were that the United States should encourage the limited and carefully managed proliferation of nuclear weapons in Europe. Ideally, this would lead to their spread to Germany, but to no other State.

In the view of this author, the orthodox "long peace" hypothesis and the policy prescriptions deduced from it are both flawed and unrealistic. There is no way to prove that bipolarity, rough military equality and nuclear weapons created the long period of peace in Europe. However, the effects of this "long peace" are indisputable. During the post-war period (1945-1990), its costs and implications have been tremendous: in 1987, the 23 member States of the North Atlantic Treaty Organisation (NATO) and the Warsaw Treaty Organisation (WTO) accounted for 80 per cent of world military expenditures, 93 per cent of world arms exports and 40 per cent of the world's armed forces. The two super-Powers, the Soviet Union and the United States, controlled more than 98 per cent of all 55,000 nuclear warheads.

This bipolar system was partly responsible for many cases of power projection (shows of force), military crises, interventions and many of the 150-200 wars in the southern hemisphere. The economic costs of the bipolar arms competition between the USSR and the United States contributed to the relative decline of the United States and the economic collapse of the USSR. The bipolar post-war system fundamentally changed national values, institutions and priorities in democratic societies. While it did not lead to any direct military conflict between the armed forces of the two Alliances, in many conflicts outside of Europe, weapons and military advisers supplied by members of both Alliances played a significant role.

During the 1980s, as part of the prevailing "zero sum" assumptions, Iraq was the major recipient of arms exports and of technical equipment for the development of nuclear, biological and chemical weapons from both East and West. In August 1990, in reaction to Iraq's annexation of Kuwait, the emerging post-Cold War international order passed its first test: unanimity had replaced the competition of the super-Powers and thus, for the first time since 1945, the United Nations Security Council adopted enforcement measures under Chapter VII of the Charter (Security Council resolutions 660, 661, 662, 664 and 665 (1990)).

The “long peace” argument underestimates the impact on security and stability that was created by the economic integration and functional co-operation that developed among European liberal democracies. The conceptual ideas for the post-war co-operative peace system as offered by Jean Monnet (regional integration) and by David Mitrany (functional co-operation) contributed to the development of supranational aspects of the European Community, to a wide measure of intergovernmental European political co-operation and to functional co-operation in the framework of the CSCE process.

Both Gaddis’s proposal for a dual Alliance membership for a united Germany and Mearsheimer’s policy suggestions reflect “old geopolitical” thinking that would revive national rivalries. In the German Unity Treaty of 12 September 1990, the four former allied Powers and both German States agreed on:

- The recognition of the borders of the Federal Republic of Germany and the German Democratic Republic as the borders of the united Germany (art. 1);
- A commitment to peace and the non-use of force except in accordance with Germany’s constitution and the United Nations Charter (art. 2);
- A binding commitment of the united Germany to adhere to the nuclear non-proliferation Treaty and not to produce, acquire or control the use of nuclear, biological and chemical weapons and to reduce its forces to 370,000 within three to four years (art. 3);
- An obligation that no nuclear weapons or launchers and no foreign troops would be deployed on the territory of the former German Democratic Republic after the withdrawal of all Soviet troops (art. 5);
- The right of the United Germany to join alliances (art. 6);
- The announcement that all allied prerogatives pertaining to Berlin and Germany as a whole would end on 3 October 1990 and that the united Germany would acquire full sovereignty (art. 7).

There is no place for classical “balance-of-power” considerations between members of the European Community. Primarily political, economic and cultural strategies are needed to overcome ethnic and nationalist conflicts in Eastern Europe. As a consequence of the events in 1989 and 1990, many premises and frameworks of our thinking on

security must be reassessed and changed: the system of collective self-defence through alliances, arms control as a political instrument for stabilising deterrence, the role of nuclear weapons, the role of existing strategic concepts such as forward defence, tactical operative concepts and the respective military force structures. The new European security system will have to be built on the positive experience of economic and functional co-operation and it should exploit the new opportunities beyond polarity:

- Bipolarity in Europe and elsewhere is gone and cannot be maintained;
- The present competitive system of collective self-defence based on alliances under Article 51 of the United Nations Charter should be replaced by a co-operative global and regional system of collective security;
- Strategic stability in Europe can no longer rest on the threat of mutual annihilation. Thus, nuclear proliferation must be stopped and drastic nuclear disarmament initiated;
- In the multipolar international system of the 1990s, significant conventional disarmament and force reductions as well as arms export constraints are needed.

Given these requirements, one must ask what the implications are for the current military Alliances.

Existing Competitive Security Systems of Collective Self-Defence

Three treaties institutionalized military bipolarity through competitive systems of collective self-defence in Europe after 1945: the Brussels Treaty of 17 March 1948, leading to creation of the Western European Union (WEU) on 23 October 1954; the North Atlantic Treaty of 4 April 1949; and the Warsaw Treaty of 14 May 1955.

All three treaty texts have much in common: they deduce their legitimacy from Article 51 of the United Nations Charter and they require mutual assistance (WEU: article V of the Brussels Treaty as amended by the Paris Agreements of 1954; NATO: articles 3 and 5; and WTO: article IV). While NATO and the WTO evolved as military alliances with joint commands and force planning, and with policy co-ordination and consultation tasks, the Brussels Treaty was given a much wider mandate—not only to prevent aggression and to maintain international peace and security, but also to further the unity of Europe

and its progressive integration. It is open to all States that are guided by the same ideals—to further co-operation in economic, social and cultural matters as well as in collective self-defence. Different majority votes are required for specific tasks, ranging from a simple or a two-thirds majority to unanimity. The WEU members agreed to settle conflicts among themselves by peaceful means and to submit disputes to the International Court of Justice.

What is the future of these institutional pillars of bipolar military competition? In their Moscow Declaration of 7 June 1990, the Warsaw Treaty members called for overcoming the division of Europe and for initiating a continuous and comprehensive institutionalisation of the CSCE process. NATO responded in its London Declaration of 6 July 1990 by announcing changes in its strategy, by downgrading the role of nuclear forces as weapons "of last resort" and by supporting first steps towards an institutionalisation of the CSCE process. Among such steps are the following: regular consultations among member Governments, a small CSCE secretariat, a CSCE mechanism to monitor elections, a CSCE centre for the prevention of conflict and a CSCE parliamentary body. Already in April 1990, the defence and foreign ministers of members of the WEU had discussed different future security structures in Europe, including an institutionalisation of CSCE and the formation of multinational divisions.

Future Military Crises in Europe or Affecting Europe

During the 1980s, four conflict scenarios that could have led to war in Europe were often discussed: (a) a nuclear first strike, (b) conventional surprise attacks, (c) an inadvertent nuclear war and (d) a deliberate or unintentional horizontal escalation. In the 1990s, a nuclear first strike lacks plausibility. A conventional surprise attack by the USSR is inconceivable. With disengagement from competitive involvements in third world conflicts, a deliberate or unintentional horizontal escalation appears impossible, and an unintentional nuclear war is unlikely if strategic stability can be maintained through arms control and disarmament, if changes in military doctrines and employment concepts can be agreed, and if third world conflicts can be contained. Thus, the potential causes of conflict which appeared plausible in the 1980s are unrealistic in the 1990s. In the 1990s, the risks that may confront Europe include:

- A possible dissolution of the Warsaw Treaty and a measure of disintegration within the Soviet Union;

- A revival of ethnic conflicts, primarily in the Balkans;
- Military conflicts, primarily in the third world;
- New non-military challenges concerning: the environment, climate, disaster relief and migration from the east and the south.

Such challenges clearly cannot be countered in a competitive, confrontational mode by military alliances, but only through co-operative common efforts. Nuclear deterrence cannot solve ethnic conflicts nor can it prevent new military confrontations in the Middle East. A fundamental shift is required from competitive to co-operative efforts, from military to political concepts, from military instruments to economic tools, and from deterrence to conflict-avoidance, mediation and peaceful settlement of disputes. The institutions, belief systems and tools of the bipolar Cold War era must now be replaced. New opportunities and challenges require a different security system, changed military doctrines and force structures.

Not only has the "Soviet threat" gone, but the framework of European security policy has fundamentally changed. Military conflicts will continue in the Middle East, Asia, Africa and Latin America. Once the extension of the East-West conflict to the periphery is gone, military exports will no longer be tools of political influence in the third world. Major arms export restrictions by the arms suppliers among the CSCE States will be required. However, without a drastic reduction of the military-industrial infrastructure in CSCE countries, the pressures for exports will increase as domestic procurement requirements decline. This will necessitate both a common policy of nonintervention and arms export constraints and controls.

The new non-military threats to human survival will be of an economic and ecological nature. Catastrophes like Chernobyl, oil spills, global warming and migration from the poor to the rich countries cannot be prevented by military approaches or by military means. These new challenges require co-operative responses: a short-term containment of catastrophes and a longer-term common approach to overcome their causes.

Future Security Tasks in and outside Europe

Three political requirements may be seen as following from the dissolution of the Cold War system:

- The development of a new co-operative collective security system for Europe;

- The build-down of nuclear, chemical and conventional arsenals and a reduction of troops in Europe;
- A restructuring of the remaining armed forces to deal with the remaining military and the new non-military challenges.

Three Institutional Building-Blocks of a New Peace Architecture

The new European peace architecture should combine a pan-European (CSCE) level and also several sub-regional levels. (This article will be limited to the pan-European level). On the pan-European level it will comprise the three building-blocks:

- *Military alliances*: NATO, the WTO and the WEU as safety nets;
- *Economic institutions*: the EC, the European Free Trade Association (EFTA) and the Council for Mutual Economic Assistance (COMECON), as an engine of economic co-operation and action;
- *Political, economic and functional consultation processes*: the CSCE process, the Council of Europe, the Economic Commission for Europe, as the basis for an emerging common European home.

The Future Role of Military Alliances

While the WTO is in the process of dissolving itself, NATO or the WEU can stabilize the transition to a pan-European collective security system, at least for the near future, by:

- Implementing the security provisions of German unity;
- Preparing, negotiating, implementing and verifying a conventional forces in Europe (CFE) I treaty, and possibly a CFE II treaty and future CSBM agreements;
- Co-ordinating troop reductions and force restructuring;
- Developing common co-operative military tasks, such as verification, crisis control and peace-keeping;
- Contributing to the development of institutions in the CSCE framework to promote common security policy.

The Western European Union offers an alternative security arrangement for collective self-defence to both NATO and the WTO under Article 51 of the United Nations Charter. Its current nine member States could either become the European pillar of NATO or its replacement. The WEU could be further enlarged if those European

Community members that are not neutral or non-aligned joined it. Thus, it could become the military and security arm that would complement the common industrial policy of the EC that already deals with defence industries. The WEU could also become the nucleus of a regional collective security organisation as envisaged in Articles 52-54 of the United Nations Charter, if it accepted former Warsaw Treaty members. States outside an enlarged EC, e.g., the United States, Canada and the USSR, could be offered either full or associate membership. As a European security union or organisation, the WEU would be transformed from a system of collective self-defence to a system of collective security, and thus it could become the security organisation within the framework of CSCE, operating under the political institutions outlined below.

It has also been suggested that the Treaty of Rome be revised to add a security component to the European Community. As a neutral country, Ireland could not ratify such a change in the Treaty, and Austria, as well as other neutral EFTA countries like Sweden, Finland and Switzerland, could not join the EC. Therefore, this option is the least promising of those considered.

In the course of the 1990s, the transition in Europe from the current security system of collective self-defence to a regional collective security system should be realized through a build-down of confrontational military institutions, armed forces and military hardware, balanced by a buildup of co-operative collective security processes and frameworks. As military confrontation recedes, the relevance of security structures will decrease while the importance of economic and functional co-operative processes will increase. Nevertheless, gradual, controlled and verified reductions of troops and weapons and the related changes in force structures will remain major items on the political agenda. As common tasks increase and new cooperative institutions emerge, alliance functions can be further reduced or dissolved.

Assumptions about an Enlarged European Economic Space

The major role in the new European architecture will be played by international and supranational economic co-operation. This process of change will take place on three levels: pan-European, regional, and interregional. A pan-European institutional core and a set of goals for closer economic co-operation exist already as the United Nations Economic Commission for Europe (ECE) and in basket II of the CSCE Final Act; these could be merged and developed further. On the regional level, the European Community will move towards a currency union

and a common European market. The intensification of the process of supranational integration, complemented by intensive foreign-policy consultation in the context of a European political council, will become a major element of stability. On the interregional level, the following steps are already in the process of being realized:

- Co-operation between the EC and EFTA countries;
- Association agreements between the EC and COMECON countries.

The following steps towards an economic dimension of security can be foreseen that may lead to a common European market from Portugal to Poland, from Malta to Norway, by the year 2000:

1. With the implementation of currency, economic and social union in Germany on 2 July 1990, the EC has already been enlarged to include the former German Democratic Republic.
2. In 1993, Austria will most likely be admitted as the second neutral EC country, a step which will preclude the evolution of the EC or a European political council into a European pillar of NATO.
3. Hungary, Czechoslovakia and Poland will leave COMECON and enter into an association with the EC.
4. By 1995, additional EFTA member States will join the EC: Norway, Sweden and Iceland, and possibly Finland and Switzerland. This would bring the EC membership to 18.
5. After a short transition phase, Hungary, Czechoslovakia, Poland and, after a longer transition phase, Yugoslavia and possibly Bulgaria and Romania will be admitted as EC members. This would bring the EC membership to 24 States.
6. In the late 1990s, the EC will have to decide on the application of the three Mediterranean countries, Turkey, Cyprus and Malta, following which it might be enlarged to 27 members.

This economic dynamic will inevitably have an impact on political security and functional co-operation in the CSCE context.

The CSCE: Framework for a New Security System?

Beyond the initial steps towards an institutionalisation of the CSCE process that are likely to be approved at the CSCE summit in Paris in November 1990, the following additional proposals may be realized in the 1990s. For each basket, specific mandates and institutional frameworks should be considered that could lead to the establishment of six pillars of a pan-European process within the CSCE:

- A political pillar (conflict and crisis control centre);
- A military and arms control pillar (verification agency);
- An economic pillar (ECE);
- An ecological pillar (environmental protection agency);
- A human rights pillar (European Court of Human Rights);
- A cultural and functional pillar (Council of Europe).

The first two pillars could be the framework for the development of a new European security architecture. Its institutions would include a European political council made up of representatives drawn from foreign ministers to political directors and bureau chiefs. The European political council would take over the tasks of European political co-operation. Two specific pan-European institutions should report to the European political council. A European verification agency would be responsible for the co-operative monitoring of compliance with arms control treaties, and a European crisis control and conflict prevention centre would act as an early warning system to help prevent crises from getting out of control. It would also be desirable to have a European court for the peaceful settlement of disputes to deal with disputes arising among member States.

A European security council would consist of representatives of both the foreign and defence ministries of member States. To facilitate the decision-making process, the council could consist of 10 or 15 of the 34 member States, with 6 permanent members—the United States, the USSR, France, the United Kingdom, Germany and Italy—and 4 or 9 additional States that would be elected for a two-year period to represent the members of five regional councils to be established.

However, no member of the security council should have veto power. The initiation of peace-keeping operations, for example, might require a majority vote of from 50 to 66 per cent, and collective security operations, a majority vote of from 66 to 75 per cent. Specific institutions could be created to support the council in its tasks. These would include a military council to offer the highest level of consultation and co-operation on the creation of joint military doctrine and on joint peace-keeping operations. This body could also organize seminars on military doctrine and on military force structure. A European arms production and arms export monitoring centre could be responsible for the monitoring of arms production limitations under a future CFE or CSBM regime and could function as a European data centre for all arms exports.

The institutionalisation of the CSCE can hardly succeed if the CSCE Charter remains a legally non-binding, political agreement. A regional collective security system cannot function effectively if it depends on consensus or offers each member veto power, as the United Nations experience with the veto has demonstrated. Such a change in the decision-making process is a pre-condition for a shift from the present system of collective self-defence to a regional collective security system. As changes in the security regime evolve, major steps to nuclear and chemical disarmament will take place throughout Europe.

Disarmament, Force Restructuring and Weapons Export Constraints

According to article 3 of the Treaty of 12 September 1990 resulting from the 2 + 4 process, Germany has committed itself to reduce its forces from 670,000 in 1989 to 370,000 by 1994. During that period, the German and foreign troop presence in Germany will be reduced from 1.44 million to fewer than 500,000 soldiers. By the end of September 1990, all 102,000 United States chemical shells were withdrawn from Germany. Europe, with the exception of the European part of the USSR and possibly France, is now a regional chemical-weapon-free zone. The total withdrawal of the land-based short-range nuclear forces and of the nuclear artillery shells in Europe—as announced in NATO's London Declaration—will be negotiated between the Soviet Union and the United States. Once all Soviet troops and nuclear systems are withdrawn from Eastern Europe by 1994, a *de facto* nuclear-weapon-free zone will exist comprising Finland, Sweden, Poland, the former German Democratic Republic, Czechoslovakia, Switzerland, Austria, Hungary, Yugoslavia, Bulgaria and Romania. For a second zone, comprising NATO countries, the Norwegian and Danish model could apply, whereby no nuclear warheads would be deployed in peacetime; however, the nuclear infrastructure would remain and air-based nuclear weapons could be flown in with the permission of the countries concerned in a severe crisis or in a military conflict. This peacetime nuclear-weapon-free zone would cover all non-nuclear NATO countries. Thus, in peacetime nuclear weapons of the United States could be deployed only on the territory of the United Kingdom and possibly in France. Negative security guarantees should be granted by all nuclear-weapon States to all non-nuclear States in Europe.

As a consequence of German unification and the intention of the Hungarian Government to leave the Warsaw Treaty in 1991, the bloc-to-bloc negotiating framework of the 22 NATO and Warsaw Treaty

countries for the CFE talks will no longer be feasible after the CFE I and CFE I A treaties have been completed. Therefore, the CFE II negotiations will probably be merged with the CSBM talks of the CSCE. In its initial CFE proposal of March 1989, NATO stated its readiness to consider in CFE II "the restructuring of armed forces to enhance defensive capabilities and further to reduce offensive capabilities". Alternative force posture proposals that offer a premium for defence over offence will permit drastic reductions of the defence industrial base, and thus contribute to a build-down of the domestically and internationally institutionalized military-industrial infrastructure. Thus, alternative force structure proposals may become a tool both to overcome the institutional remnants of the Cold War and to establish a new peace architecture. Given the new challenges which confront Europe in the 1990s, military forces should be given two missions:

- A territorial self-defence mission (initially 80 per cent of current troop levels);
- A common security mission (initially 20 per cent of troops).

For the territorial self-defence mission, the forces should be structured in national contingents (with a strong conscript component) according to the principles of a non-offensive or confidence-building defence. For the common security mission, highly specialized professional multinational forces should be trained together in international military academies for their specific common tasks: to deal with the implementation of disarmament (verification and conversion), peace-keeping, and enforcement measures under the United Nations Security Council, and with environmental hazards and transboundary catastrophes. These common security forces should have a multinational command structure, on either a subregional or a pan-European level, and national subunits. In the past, non-offensive defence concepts have often been rejected for ideological, political and military reasons. The new political and military circumstances require an open dialogue on such concepts, which could take the following forms in the CSCE framework:

- A seminar at the highest military level on current military force structures and on non-offensive defence alternatives for Europe;
- A high-level task force of military experts from the major European countries to develop common principles for military force restructuring.

Political principles—not old procurement plans and contracts—should determine the future force structures. Now is the time to revise military doctrines and strategic and tactical-operative concepts and

force structures, and to overcome nuclear belief systems and strategic mindsets that are based on old premises, doctrines, force structures and political settings. Non-offensive defence is an idea whose time has finally come. By the turn of the century, when the European Community may cover Europe from Portugal to Poland and from Malta to Iceland, a war among its members will have become unthinkable. Thus, as conventional force reduction proceeds, the national self-defence or "shield" component could be reduced from 80 to 50 per cent of each nation's armed forces, while the multinational "sword" forces could be increased from 20 to 50 per cent of all forces of the CSCE countries.

In 1989, the armed forces of NATO Europe (3,137,400), of the non-Soviet portion of the WTO (1,211,300) and of other European countries (417,800) totalled about 4,766,500 soldiers. In addition, 326,400 United States and 570,600 Soviet troops were deployed in Europe outside their own national territory. By 1995, the total number will most likely be reduced to approximately 3,000,000 European and about 70,000 United States forces. The national contingents of multinational forces could by then comprise some 600,000 non-Soviet European and an additional 70,000 United States and 70,000 Soviet forces. If one assumes a further 60 per cent reduction of the European forces by the year 2000, the national "shield" forces of all European countries would then comprise only 600,000, and the multinational "sword" forces an additional 600,000. The "sword" forces should consist of specialized peace-keeping units for contingencies within Europe and of highly professional expeditionary forces for enforcement measures within the framework of the United Nations collective security system.

Conclusion

This policy perspective of a European security system beyond bipolarity, based on the provisions of the United Nations Charter for a global and for a regional collective security system, can contribute to political stability by fostering economic prosperity. This perspective differs from that of the adherents to the "old thinking on the 'long peace'". It requires co-operation rather than nuclear deterrence, permanent compromises instead of the classical balance of power. In a community of States where increasing portions of national sovereignty are being transferred to a supranational organisation, war among its members becomes unthinkable. Thus, the unique historical experiment with a small-scale European peace system within the framework of the European Community should be expanded gradually to cover the territory from Portugal to Poland and from Malta to Iceland. Germany,

as the largest single country, with the strongest economy, will be fully integrated into this expanded community, and this fact should counter fears that the negative experience of two world wars could repeat itself. Thus, the long negative peace of the bipolar post-war period should be gradually transformed into a positive peace based on positive experience to fulfil the visions of Jean Monnet and David Mitrany. Just 200 years after Immanuel Kant wrote his philosophical treatise on "Perpetual Peace", Europe may come close to the realisation of his vision.

EUROPE AS A CONTEST OF MEANINGS

Commentary on international affairs usually purports to convey the image of knowing, being in control and having an accurate understanding of the issues within the dialogue. New developments and trends are presented as intelligible and calculable.

The current debate on Europe has, however, a different quality. Developments on the continent are exceptionally open to various interpretations and alternative views. Commentators and analysts alike seem to agree on one thing only: the uncertainty of the current situation and the unpredictability of the future.

Emphasis is now being placed on the surprising, vague and incalculable nature of events. Earlier failures in sensing the winds of change have been willingly admitted. The general feeling is that old certainties have been replaced by new uncertainties. Continuity has broken down, and history is no longer seen as set in predictable patterns.

This implies that any development is regarded as being far less calculable than was the case previously. There are loud complaints that the future evades prediction. A period of rapid change is viewed as obscuring the permanent features of the evolving international order. There is a broadly shared feeling that the familiar rigidities of the strict division that dominated the European continent during the post-war period is dissolving rather rapidly, that Europeans are getting greater freedom, flexibility and opportunities for new patterns of interaction. They are losing the burden of having to live with highly structured confrontation, but still seem to suffer from uncertainty resulting from the dissolution of the old order.

This uncertainty is also reflected in a great number of analyses. "The states of Europe have embarked upon a journey towards a

destination unknown. We cannot provide roadmaps, all we can do is to posit a spectrum of possible destinations on the basis of present trends", writes one distinguished analyst. "The trends are contradictory, often inchoate, and invariably uncertain and conjectural", he further states.

Old truths crumble away and new understandings have not yet emerged—but they will presumably not be as neat and clear-cut as the old ones, warns another analyst. "Any new security system for Europe won't be nearly as tidy as the previous one", he cautions, but finds comfort in the idea that "maybe it doesn't need to be." Anyhow, the prospective developments in the cards are described as "messy". No wonder terms like "pluralist", "complex" or "multi-polar" dominate current efforts to describe the essence of the present-day Europe. "Some of us thought we knew the Europe of tomorrow, symbolized by the magical figure of 1992", says one authoritative voice in the debate. He now confesses that doubts prevail about its direction. However, one thing seems to be certain: profound reconsideration is needed.

The Meta-Boundary is Gone

In trying to provide some sense of direction, most analysts focus on the world of political practice. This is certainly needed, but there is also a world of meanings and understandings to be restored.

It seems therefore crucial to observe that the formation of a new Europe contains an unmistakably conversational quality. In a sense, Europe is in a process of being restated, or to put it differently, "Europeaness" is returning after a long period of absence. It has become impossible to speak of the continent in the present tense; the bipolar Europe based on division between two opposing Alliances, two super-Powers, two economic organisations, and the two Germanies—one on each side of the main divide—is already past, and a new understanding has yet to be defined.

Consequently, while the "old world" is in the process of transition, there is a search going on, with the participation of a multitude of voices, to establish the nature of these changes and find sufficient agreement on the course to be taken. For once the meaning of Europe is not predetermined; it has to be established by discourse, in which various meanings clash and collide with each other. In order for normalcy to return, a new "regime of truth" has to be created. It is needed in order to replace the old one now in disarray.

Europe, seen as a market of meanings, is hence not only uncertain and confused; it is also increasingly competitive. The new Europe in

formation cannot be understood only in terms of the re-ordering of States and their interrelations. Nor is it a question of establishing new international organisations, replacing old tasks with new ones, or creating new hierarchies of power and influence. In other words, the Europe—or “Europes”—to come is not just a politico-geographic delineation, a place or a set of political relationships. It is above all the focus of a contest of meanings. Many previous truths, imposed by the normalcy of the post-war system, have been called into question. Quite a number of the aspects of these earlier accepted truths about Europe, usually implicit, hidden and closed, are now discussed openly in a search for broadly acceptable and durable ground.

New Voices

The debate itself has a number of new qualities and transcends many previous boundaries. There are not only new views and arguments emerging, but also new voices and forces influencing the debate. For example, Johan J. Hoist has observed that “social forces have been set in motion which are not subject to diplomatic management and suasion”. He thinks that these social forces will shape the future more than will the diplomats, and that the interplay of various forces determining the outcome of the discourse will be more complex than in the past.

Another way of putting it would be to argue that the process has become somewhat less statist and increasingly societal in character. The new voices, often with a background in various social movements, have endeavoured to reformulate such key political concepts as security and development.

As to security, the prime move has been to refuse to see it in predominantly military terms. The consequence has been that the military factor has moved from the front to the back seat, and a military attack has ceased to be viewed as a clear and present danger. Major military threats are disappearing in Europe, and the long-standing enmity of the competing blocs has lost credibility as well as centrality.

The emerging perceptions of security focus on social relationships rather than on the abstraction of the security of the State, understood primarily in exclusively spatial terms. These new conceptualisations point to the inter-connectedness of peoples in different places. They allow for denuclearisation as well as demilitarisation in general. They challenge, among other things, the inherent assumption of deterrence, that sovereignty or power is based upon the possession of technical means for mass destruction.

Consequently much of the nuclear terminology and terms like "first use" or "flexible response" are fading into oblivion. Some nuclear capacities remain, but mainly as ritualistic remnants of the old order and the previous understandings of security. They are justified in terms of "reassurance" rather than "deterrence", and in general a discourse of political co-operation supplants previous vocabularies.

New Views

Instead, the non-military dimensions of security—economic, social and ecological—have come to the fore of the debate. It is agreed that such security, encompassing various forms of human security in post-industrial societies, cannot be safeguarded by the existing confrontational system. The role of this system is therefore tuned down, and the emerging regional systems are allotted more "political" tasks, usually labelled as relating to the "management" of change.

The sources of potential European conflicts are seen as more heterogeneous and different in character than has until now been envisaged by the bipolar confrontational system. The efforts to picture credible new threats focus mostly on out of-area conflicts, and the understanding is increasingly shared that war is no longer a possible instrument of policy in Europe.

The new, emerging understandings involve at times more than just a refusal to equate military means with security, and they are not tantamount to disarmament campaigns or demands for the wholesale dismemberment of either of the blocs. The new themes link up with wider global concerns for ecological survival, development and justice, all endangered by the process of global militarisation. It remains, however, to be seen how far they will go as they frequently collide with far more traditional interpretations of the essence of international relations, as applied to the world outside Europe.

For many, the main question is who "won" and who "lost" the Cold War, and who are the "losers" and who are the "winners" as a new European security order is emerging. The lists and the arguments vary, but the debate tends to vanish as soon as it is seen as part of an essentially irrelevant approach.

Such questions are part and parcel of the mentality of the "old world". They provide very little guidance for the future. The same can be said for the argumentation on the "disappearance of history". Actually, politics are becoming politics in a real sense of the word, and Europe has to face its history as something to be explored and

understood more deeply than previously, without the fixations of the Cold War. That is the core of Europeanisation.

There is also much debate concerning the interests and policies of the various components of the new Europe, above all, of the united Germany. Such analyses, although rather traditional, have somewhat more to offer. They are of importance in the construction of the political identities that characterize the post-Cold War world. Germany, in the form of *Die deutsche Frage*, is a central reference point for political change and a supreme test of European politics more generally. The united Germany destroys very concretely an essential part of the East-West divide and forces a reconstruction of Europe on different grounds. It has been a grand example of how political events often precede official meaning, leaving it painfully contested and restructured in their wake.

Reforming the CSCE

What is also replacing the forms of discourse that are residuals of the Cold War period is the debate on the new security system of the continent. This system will continue to have several components, among them the military Alliances, the European Community in a stabilising role, and a considerable network of other organisations as well. With relatively amorphous, non-military threats to face, developments towards increasing pluralism, and a broad variety of voices and interests, the European "architecture" will remain far less streamlined than many of the current designers think and hope.

It is, however, obvious that the Conference on Security and Co-operation in Europe, with the deepening of values common to all the participating States, will become increasingly central. In spanning all parts of Europe, CSCE is best placed to provide a framework for addressing the whole range of the continent's security problems. It has the advantage of not being confined to military security only, but of also encompassing the fields of economic and environmental security that are growing in importance. Much of the discourse therefore centres around the future of CSCE.

In its present stage, CSCE is not a permanent institution, but rather a continuing series of diverse though interdependent negotiations. This may, however, be changing. There seem to be three different lines of approach to the formalization of CSCE. A minimum line would be to create specific institutions, such as a council for economic co-operation, an environmental protection agency or a conflict

prevention centre. Another minimal approach would be to institutionalise political consultations through regular meetings, including the introduction of a small, co-ordinating secretariat. A third line would be to transform CSCE into a nucleus of a pan-European collective security system. This would make CSCE into a true regional organisation and provide it with a concrete security role by, among other things, having it incorporate the existing Alliances and eventually become a substitute for them.

There is agreement that CSCE's organisational structure should be strengthened, but the idea of an all-European security system is still quite controversial. Particularly, the concept of merging of the two existing Alliances under its roof meets resistance, and is regarded by many as belonging more to the sphere of wishful thinking than to reality.

It is quite likely that the European security system will continue as a multi-layered system rather than something comprehensive and fully co-ordinated. Many of the old issues, like those pertaining to *Die deutsche Frage* and the new relationship between Germany and the Soviet Union, have been settled within the context of such a multi-layered system. This is likely to continue, and it implies that the outlook for Europe will also be "pluralistic" in the future, and no longer premised upon a divided Germany or a divided Europe.

Building an All-European Security System: A Czechoslovak View

The sweeping changes in Central and Eastern Europe that took place in 1989, the momentous process of change currently under way in the Soviet Union and the transition from an era of confrontation to one of East-West co-operation are developments that lend fresh urgency to the question of building a new security system in Europe. New elements of that process can be discerned, in particular in the field of disarmament and in the formation of new institutional structures. The various aspects of this developing process are not isolated from one another—in fact, they are closely interconnected. We can even say that a substantial cutback in arms production is a prerequisite for the building of a new European security structure.

The need for arms control in the period immediately following the Second World War was beyond dispute; recognition of that need was heightened by the aftermath of the horrors of that war and of the shock of Hiroshima and Nagasaki. Yet, that consciousness was soon

stifled as a result of the Cold War, the ideological rivalry of the two blocs, and the growth of military-industrial complexes in the East and West, and also in the South. By force of inertia, that lethal mechanism, backed by a high-quality research and development base, is still running. Consequently the productivity of ever more sophisticated weapons has been much higher than that of the negotiating forums dealing with disarmament.

That disparity, growing over the years, was bound to reach a critical juncture when scientists and politicians began to realize that such trends increased the danger of a universal catastrophe. A fundamental change took place in the mid-1980s, when the Soviet Union substantially reconsidered the confrontational policy of the previous, Brezhnev era.

Expectations as to what can be achieved in negotiations have consequently become more realistic. While general and complete disarmament has remained the avowed ultimate goal, much more modest steps have come to be actually discussed. The propagandistic cloud around them is slowly, yet steadily, dispersing.

A qualitatively new situation has arisen that has not only brought down the Berlin Wall and the iron curtain, but has also produced meaningful concrete results such as the following:

- The USSR-United States Treaty on the elimination of their intermediate-range and shorter-range missiles (INF Treaty) is being successfully implemented. Thus, 4 per cent of the nuclear strike potential of the world is disappearing and a dangerous link is being taken out of the chain between tactical and strategic nuclear forces;
- The Soviet-United States talks on strategic offensive weapons, which should result in substantial reductions, are drawing to a close;
- Both in the North Atlantic Treaty Organisation (NATO) and in the Warsaw Treaty Organisation (WTO), few doubt the need for opening talks on tactical nuclear weapons, which have by now largely lost their purpose;
- Military budgets as well as forces are being reduced both in the East and in the West and conversion of military production to civilian purposes has appeared on the agenda;
- New impetus has been given to the negotiations on chemical weapons.

The situation is, though, still far from a state where negotiators at disarmament forums can readily reach common positions simply because of the favourable international climate. The Persian Gulf conflict shows that, regrettably, there are still believers in the use of force in solving disputes. The world's response to that act of aggression has been, thank goodness, fairly unequivocal—substantially different from similar cases in the past. This time the Persian Gulf has not become an arena of East-West confrontation, and practically the whole world, including the super-Powers, has concurred in condemning the invasion of Kuwait. This is creating favourable pre-conditions for the more effective implementation of the resolutions of the United Nations Security Council.

However, the effect of this crisis on arms control is not unequivocal. On the one hand, it is becoming evident how short-sighted it is politically to sell arms to anyone on the basis of purely commercial interests. More than one dictator has been armed in that way. Let me recall in this connection that the new Czechoslovak leadership did away with such practices shortly after the "velvet revolution" and has discontinued arms exports to hotbeds of tension. In future, we intend to halt arms exports altogether. On the other hand, we are concerned at apparent attempts in the military and political circles of certain great Powers to take advantage of the situation to hamper programmes for cutting military budgets.

It is obvious that reductions in military potentials have led to a number of consequences with which Governments have to cope; limitations of armed forces, elimination of armaments and cuts in their production are giving rise to serious problems of adjustment. The most serious lie in the sphere of social welfare. We in Czechoslovakia are encountering such problems, especially since our material base is not ready for the conversion of military production and the retraining of the personnel concerned. Conversion has affected all major enterprises and will require the dismissal of some 30,000 people and the gradual transferal of another 200,000 to civilian lines of production. This situation has resulted, *inter alia*, from the decision to stop the manufacture of tanks in Czechoslovakia this year and of armoured infantry fighting vehicles next year.

Yet, nobody should be discouraged by the social and other problems arising in this connection. Any slowdown in the disarmament process would amount to missing a chance offered by the present favourable international situation. Therefore, the Czechoslovak Government is determined to cut back on arms production and to reduce the size of

the Czechoslovak Army. A detailed plan has been worked out to cut it down from today's 200,000 troops to 140,000 in two years.

The limitation of armament is now particularly relevant in Europe. The European continent has had, in the post-war era, the dubious distinction of having the highest concentration of arms in the world. The source of continued tension in the area lay in the long-standing asymmetry in the conventional armaments of the two blocs. NATO countries were particularly concerned at the military potential of the Soviet Union. While recognising the fears that had been generated by the series of defeats the Red Army suffered in the initial phases of the invasion of the Soviet Union by Nazi Germany, nobody understood why the Soviet Union should need "for defensive purposes", as they used to say, over 42,000 tanks, 45,000 armoured combat vehicles and 42,000 missile and artillery systems. That potential was further strengthened, by about one third, by the armaments and equipment of the forces of the other Warsaw Treaty States.

The opening of talks on conventional armed forces in Europe in March 1989 with a mandate to negotiate the elimination of asymmetries and substantial limitations of arms was thus received with considerable relief, although doubts were expressed about the feasibility of such an objective. The negotiators were facing a difficult task. The ill-fated negotiations on mutual and balanced force reduction that ended in a fiasco after 15 years had set a negative precedent.

Yet, the very first day of the new Vienna negotiations indicated that history did not have to repeat itself. It does not often happen in negotiations that both sides put forward comprehensive considerations, including conceptual approaches, at an early stage, but that is just what did happen in Vienna on 9 March. Then, in May 1989, President Bush called for the conclusion of the negotiations within one year. Although that has not proved possible, indisputable progress has been achieved. At the time of writing, the CFE treaty has not as yet been finalized, but its contours are clear enough.

Implementation of the envisaged treaty will create —within about three years—an entirely new military-strategic situation on the European continent. Tens of thousands of tanks, armoured combat vehicles and artillery systems as well as hundreds of combat aircraft and helicopters, i.e., the weapons best suited for surprise attack and for large-scale offensive operations, will be dismantled. Each side will be left with some 20,000 tanks, 30,000 armoured combat vehicles, 1,900 combat helicopters and sizeable numbers of artillery systems

and combat aircraft. These are still huge military capacities, but all of that armament and equipment will be subject to an elaborate system of verification and inspection, down to the regiment level. This will rule out the possibility that either side could suddenly concentrate large units in a way that could be used readily for aggressive purposes. The whole verification system will be strengthened by a set of stabilising measures that will, *inter alia*, limit military activities and the call-up of reservists.

The overwhelming majority of the States participating in the Conference on Security and Co-operation in Europe (CSCE) are convinced that the Vienna negotiations are "doomed to success". Although it may not be possible to agree on all the items that have been on the agenda, the arrangements on which agreement is likely to be reached will be more than just partial measures or declarations. The issues that will remain open are to be taken up at subsequent negotiations that will continue under the earlier mandate. Those talks should produce a "Vienna IA" agreement that can be expected to reflect the entirely new situation in Europe better than "Vienna I".

The mandate adopted at the 1989 Vienna Meeting has become increasingly out of date, primarily because of the fact that it was based on the existence of the two blocs. The situation has changed with German unification and the transformation of the WTO from a military to a political entity. The absurdity of the situation is illustrated by the fact that the national limits for individual categories of armaments that were originally envisaged for the German Democratic Republic are being divided among the other Warsaw Treaty countries. Czechoslovakia is the only one that did not request a single piece of equipment from the "GDR legacy" for its own final national limit. This, too, demonstrates the unconditional determination of the new Czechoslovak leadership to put the contents of the declaration on reductions in forces into practice.

Czechoslovak diplomats have found it rather difficult to understand the efforts of certain countries to obtain the highest possible limits on arms. War in Europe is practically out of the question and, in any case, 1,000 more or 1,000 fewer tanks or armoured troop carriers in Europe would not matter. Obviously, military-technical aspects are playing the crucial role in some of the decision-making concerning levels of sufficiency, whereas Czechoslovakia is consistently giving priority to the political aspects of security that include enhancement and institutionalisation of the CSCE process.

Continuation of the present Vienna negotiation, despite its increasingly unsuitable mandate, is necessary not only because it has not yet exhausted all its potential and some of the unresolved questions will have to be carried over to the next phase. It is also necessary because it will take a considerable time, probably about a year, before a new mandate can be formulated with regard to the qualitatively new elements in the development of the CSCE process. It would not be acceptable for negotiations during that time to be reduced to mere talks about arrangements for the next phase.

Czechoslovakia has worked for the preparation of a new treaty with the idea that negotiations should start shortly after the Paris summit. Besides dealing with the remaining unresolved problems, a Vienna IA. agreement should provide for further force reductions and for yet greater stability in Europe. The aim is to continue the disarmament process in Europe and not to delay after signing the first treaty; as soon as possible the European continent should reach the state where each country would possess only that military potential necessary for its defence.

That of course, cannot concern only the member States of the two Alliances; the possible withdrawal by some countries from the WTO must also be taken into account. That is why Czechoslovakia envisages a synthesis of the 22-State negotiations on conventional armed forces and the 34-State negotiations on confidence-building measures after the CSCE Helsinki follow-up meeting, to be held in March 1992. It is understandable that quite a new mandate will be necessary for Vienna II negotiations, in the elaboration of which the representatives of neutral and non-aligned countries should also participate. We have therefore assumed that the Paris summit will authorize a group of experts to prepare such a mandate, to be approved in Helsinki.

The progress achieved in reducing the numerical strength of troops makes it possible to conduct serious negotiations on establishing new all-European security structures. Meetings of the preparatory committee for the Paris summit showed that there is a broad consensus for establishing a centre for preventing conflicts, as had been proposed by Czechoslovakia, the German Democratic Republic and Poland. The proposed centre would collect information to facilitate confidence-building measures and to provide a dispute-settlement and treaty-verification mechanism in Europe.

We consider it absolutely necessary to create a reasonable, entirely independent mechanism for the peaceful settlement of disputes. Though

the possibility of a major conflict in Europe is almost entirely out of the question, it is necessary to allow for the real possibility of different minor disputes in the emerging, united Europe. The nucleus of such a mechanism could be elaborated at the expert meeting to be held in Valletta at the beginning of 1991. The mechanism would start operating after endorsement by the Helsinki follow-up meeting or by a meeting in 1991 of a "Council for Security and Co-operation", should such a council be established, as was recommended in the above-mentioned proposal.

We do not underestimate any part of the CSCE institutionalisation process—be it the security, economic, environmental, or humanitarian dimension. However, we are convinced that it is impossible to allow the security part to lag behind other developments. Our intention is to establish firm, all-European security structures that would be based on a low level of armaments and a high level of mutual confidence. The advocates of the establishment of new security structures are sometimes asked whether they intend to entrust the future of the European continent to a system of "collective security" which may fail, as was the case with the League of Nations.

There is some justification for this question. Of course, we must take into account the experience acquired in World War II and in the Cold War period. The whole world, and above all the nations of Europe, have paid a high price for that experience. We in Czechoslovakia, who have lived the last forty years on the dividing line between the two blocs, have been ardently seeking new possibilities for safeguarding the security of the whole continent. In pursuing that goal we do not feel that all is in vain and fear that we may again end up with a disaster similar to that which befell the League of Nations. That would be to see the future as having no prospects, no solutions. We believe that solutions exist. Together with other Helsinki process participants we are seeking new, untried ways.

One route consists in transforming military-political blocs. Both the WTO and NATO have taken initial steps in that regard. The reason for Czechoslovakia's continued membership in the WTO is that it may still play a positive role, particularly in the field of disarmament and in building new all-European security structures. At the same time, it is quite possible that the WTO will cease to exist within a few years, while NATO will continue to operate, though in a modified way. We assume that NATO would then work alongside the gradually forming all-European structures, which might take over some of NATO's functions in safeguarding the security of CSCE countries.

The emphasis that we put on the structures within the CSCE framework sometimes raises worries that it may result in the weakening of NATO and cast doubts upon the American military presence in Europe. Such worries are unfounded. There is no doubt about the asymmetry between NATO and the WTO. We appreciate the positive role that NATO has played, and can continue to play—if necessary changes are made—in the future. We consider the American military presence in Europe as an important stabilising factor in the foreseeable future.

It is difficult to foresee how long the all-European security structures and NATO will coexist. However, it is quite possible that, by the turn of the millennium, NATO members themselves will come to the conclusion that the further existence of the Alliance is unnecessary. Of course, the basic pre-condition of that would be the disposal by that time of excessive quantities of weapons, the creation of an atmosphere full of confidence among all European partners and the establishment of an effective security system that would have proved itself.

There is no doubt that the solving of security issues on a bloc or inter block basis has become outdated and that it is the CSCE framework itself that provides the springboard for the future. The first steps towards establishing all-European structures were already taken by the 1986 Stockholm Conference. The implementation of the conclusions of the Paris summit will make it possible to take further courageous steps. Impetus could arise from a workshop envisaged for 1991, similar to the one on military doctrines held in Vienna last January, which will deal with the prospects of the development of all-European security structures.

The new European security pattern will depend to a considerable extent on the CFE treaty and the CSCE documents on confidence-building measures. Of course, the range of mechanisms created for their implementation will be limited. It will be necessary, therefore, to build political mechanisms to evaluate the situation in the field of security and overall co-operation from the global point of view.

Since the beginning of 1990, Czechoslovakia has been actively working to develop within the CSCE framework new institutions for dealing with such issues. We suggested that a European security commission should be created as well as a European council for security and co-operation. A number of our suggestions have been used in drafting the documents of the preparatory committee for the Paris summit.

We consider it necessary for the heads of State and Government of CSCE participating States to meet every two years to discuss major issues arising from implementation of the CSCE documents and to consider further developments on the European continent. It is understandable that security issues should play an important role at such meetings. At the same time, we realize that a flexible executive mechanism will have to be set up. We have therefore suggested that a council for security and co-operation at the level of foreign ministers should meet at least twice a year. If need be, the council could meet at the level of governmental plenipotentiaries even more frequently to solve topical issues, make corresponding recommendations, or consider new proposals.

It is not our intention to turn the Helsinki process into a bureaucracy. However, in our view the time is ripe for the establishment of a small secretariat to deal with the technicalities of operating that process. Practically all CSCE countries share similar positions. We would be honoured if the CSCE secretariat were located in Prague.

However, the most important result of the 1990 summit will be a treaty on conventional armed forces. Its signing will represent an event of historic significance in the chronicles of disarmament and of the building of new security structures in Europe.

A PAN-EUROPEAN SECURITY COMMUNITY: UTOPIA OR REALISTIC PERSPECTIVE?

The fact that the Cold War has ended does not imply that peace has broken out. Instead, we live in a period of crisis, which, although characterized by risks, is above all marked by a range of good opportunities to build a much more cost-effective security regime than we have ever known in European history. The 40-year-old bipolar security regime has served us well but has become outdated and too expensive. The North Atlantic Treaty Organisation (NATO) and Warsaw Treaty countries together still have more than 100,000 tanks, 90,000 pieces of artillery, 150,000 troop carriers, 40,000 nuclear warheads, 10 million active soldiers and 15 million reserves. In the rapidly changing international environment, this is a surrealistic spectacle. Consequently there is a great demand for a much more cost-effective security regime.

The greatest challenge of the 1990s is to replace the bipolar security regime with a pan-European security community. The term "security community", coined by Karl Deutsch, refers to a group of countries

which feel mutually very secure. In case of conflict, none of the member States expects the others to use or threaten violence. Examples are the Atlantic Community, the European Community (EC) and the Nordic group of countries. A couple of years ago the idea of extending the security community of Western Europe to the whole of the continent would have been considered international political science fiction. Now it is no longer an "academic", but a solid "political", concept. It provides not only an attractive prospect, but also a set of pre-conditions for its realisation. It is a concept whose time has come. The creation of a pan-European security community (PESC) requires that several pre-conditions be met. Each of them is necessary but individually insufficient. One thing that is not necessary, however, is a supranational organisation. The following pre-conditions have historically been proven to enhance the creation of security communities:

1. Compatibility of fundamental values
2. Democratisation of the member States
3. Communication and mobility
4. Economic growth
5. Core-area(s)
6. Expectation of mutual benefits
7. Political efficacy
8. Constructive management of ethnic and nationalist conflicts
9. Successful arms control
10. Common dangers or common concerns about the rest of the world

The first pre-condition is the *compatibility of fundamental values* and the growth of a feeling among the countries involved that they are members of a family. The values concerned are of a political, economic and social nature. For the EC countries this requirement has, to a great extent, been fulfilled. One aspect of 1992 is a significant transfer of capital from the economically better-off part of the EC to the less developed areas in Greece and the Iberian peninsula.

Each of the recipients will have funds available that equal those of the Marshall Plan. In addition to sharing a belief in the value of democracy and a social market economy, and a sense of solidarity, there is a growing feeling of being related. More and more people have become "hyphenated" Europeans. For example, a great number of Flemish students identify themselves as Flemish, Belgian and European. In Central and Eastern Europe, values seem to be growing

more and more compatible with values shared by Western Europeans. Some countries, however, still have a long way to go, as indicated by the many ethnic and nationalist conflicts that are going on. One thing is sure: the boundaries of the pan-European security community will be determined not so much by simple geography as by a geography of values. A thorough investigation of those values and of the political psychology of Europe is a *conditio sine qua non* for understanding this process of integration.

The second pre-condition for the creation of a security community is *democratisation of the member States*. The future of Europe will be determined not only by political psychology and values, but also by structures. Democratisation is one of the most significant confidence-building measures there is. Democratic countries are used to managing their conflicts—whether domestic or involving other democratic States. Democratic countries have never fought other democratic countries. Authoritarian countries tend to cultivate external enemy-images to justify their repressive regimes. It is also easier to build confidence between open, democratic States than between closed, authoritarian ones.

In Central and Eastern Europe we have noticed drastic changes in the direction of democratisation. There are still great differences, and regression is possible. Supporting the process of democratisation is an important investment in European security. A Wilsonian foreign policy, in which democracies are favoured, can no longer be depicted as meaningless idealism.

The third pre-condition is better *communication and mobility*. Both are necessary for mutual understanding. Within the European Community optimal mobility is planned by 1992. At the end of that magic year, there should be free movement of people, goods, capital and services. In Central and Eastern Europe significant progress has been made. However, not all kinds of mobility should be considered as signs of progress. In the last two years approximately one million East Germans have moved to the Federal Republic. This movement created serious problems for all countries involved; the decision to treat the Elbe as just another river and to unify Germany seemed to be the solution. Another kind of mobility which needs to be coped with is migration from outside the EC, especially the influx of economic fugitives and illegal migrants. To prevent internal and external tensions and the growth of right-wing extremist groups, these problems must be handled more constructively.

Another essential pre-condition for the creation of a security community is *economic growth*. Hyper-inflation undermines democracy and international solidarity. Preferably, economic growth should be present in all the countries involved, but at least in the *core-area(s)*, such as in the EC. Fortunately, this is indeed the case; according to the Cecchini report, the 1992 process will enhance growth. The economic situation in Central and Eastern Europe is considerably worse, with a large portion of the population falling below the poverty line. However, in all of these countries serious steps are being made towards a more productive social market economy. In some countries, however, for example the Soviet Union, changes seem to be too little too late. A bank for reconstruction and development has been created for investments from both the public and the private sector. But on the whole, with the exception of the German Democratic Republic, the level of co-operation has not been sufficient. Economic aid from the United States, for example, amounts to less than one third of one per cent of its military expenditure. This is short-sighted.

A fifth important variable in the creation of a security community is the role played by core-areas. Core-areas are strongly developed political-administrative systems, consisting of a country or a group of countries, which are capable of playing an important role in the dynamics of integration. After the Second World War this role was performed by the United States *vis-a-vis* Western Europe by means of the Marshall Plan and the creation of NATO. Today's core-area is the European Community. With respect to its potential role one can distinguish two different approaches. The first favours a speeding-up or "deepening" of the process of integration of the Twelve in the direction of a political union. The second, on the other hand, favours a "widening" by opening up to new countries now. These approaches need not, however, be mutually exclusive. Belgium, for example, prefers a deepening in the short term in order to enhance the chances for a successful widening later. Western Europe should talk with one voice and take the initiative.

Until now the short-term perspective of Community relations with the rest of Europe has been most clearly set out in the Delors metaphor (named after Jacques Delors, President of the EC Commission) of the three concentric circles. The core around which those circles would develop would be made up of the Twelve, federated in a monetary, economic and political union. The first circle would consist of Austria, Switzerland and the Nordic countries; they would complete the

European economic zone, but not become full members of it. The second circle would contain the Eastern European countries that succeed in their political and economic revolution; they would be linked by associative agreements and enjoy funds for reconstructing and developing their economies. In the third circle would be the Soviet Union, which is considered too big, too unpredictable and too explosive to be classified with the others; no economic aid programme was envisaged for it. At the Dublin meeting of the European Council in June 1990, however, there was a growing awareness that a more adequate system of economic co-operation should be setup.

The sixth pre-condition for the creation of a security community is *the expectation of mutual benefits*. The expectations could be of an economic, military-strategic or ecological nature. Eastern and Central European countries expect economic benefits from co-operation. For example, the fact that the Belgians expect 50,000 more jobs as a consequence of German unification makes them much more favourable to the unification process. All Europeans expect that security co-operation will lead to a more cost-effective security regime. Co-operation is also needed to prevent the proliferation of chemical and nuclear weapons and missiles to the rest of the world. In addition, there is a common concern about redressing ecological imbalances. Of course there will also be costs. The expected cost-benefit analysis will certainly determine the chances of a successful pan-European security community.

The seventh pre-condition for success is *political efficacy*. Without political support a Government cannot function. The political commitment of the people to their Government depends not only on its democratic election, but also on its efficacy in handling public expectations (for example, the creation of economic welfare and the constructive management of conflicts). A democratically elected regime that cannot deliver is doomed to fail. This could lead to Weimar-type situations and to "Belfastisation". A too slow response to moderate demands could lead to radicalisation; from a demand for autonomy to a declaration of independence; from non-violence to violence. A real federalisation of the Soviet Union could help manage the emancipation pressures more effectively than is the case at present. What should certainly be prevented is a creeping protectionism between the republics, for example, the erection of internal trade barriers. In addition to the creation of a looser federation, the Soviet Union will clearly have to rebuild its huge administrative machine, employing its 17 million civil servants, into a more effective public administration.

The next pre-condition concerns the *constructive management of ethnic and nationalist conflicts*. An escalation of these conflicts could seriously inhibit the establishment of a security community. Analysing the dangers of escalation, some analysts warn of the "potential Balkanisation" of Central Europe and a possible "Lebanisation" of the Soviet Union. Even if these warnings are exaggerated, there is plenty of conflict-escalation potential. In Central and Eastern Europe (not including the USSR) there are 6 potential border disputes and 14 significant ethnic minority pockets of trouble. Eastern European nationalism according to Zbigniew Brzezinski is historically less mature than that of the West. It is more explosive, emotional and intense, and it is deprived of the moderating influence of regional co-operation as in the European Community. Of the 290 million inhabitants in the Soviet Union, 149 million are Greater Russians. This ratio of 50:50 is rapidly disappearing. A potential time bomb, according to Brzezinski, is the fact that 25 million Russians live outside their ethnic area, as do 40 million non-Russians. In many cases national consciousness has reached the stage where not only autonomy, but also the dream of national sovereignty, has become widespread. If these conflicts are not handled constructively, they could seriously hamper the processes of *perestroika* and demoralisation.

The next pre-condition is *successful arms control*. Although successful arms control is not the only requirement, it is a very important one. The whole arms control process should be speeded up and adapted to suit the rapidly changing strategic environment. This year we expect significant progress in the conventional arms control forums dealing with conventional armed forces in Europe and with confidence- and security-building measures. With respect to chemical weapons, both the United States and the USSR intend to eliminate 98 per cent of their present arsenals. However, strategic nuclear weapons will be reduced by a mere 25 per cent. We should go much further in reducing the forces and restructuring them in a mutually more defensive defence mode. This is essential if we are to transcend the old security dilemma and provide substantial peace dividends.

Another requirement is the application of the *principle of subsidiarity* to security. This principle suggests that some security tasks are best tackled at the national level, others at the Western European or the Atlantic level, or even at the global level within the framework of the United Nations. There is a growing consensus that there are some security tasks which could be handled in a more cost-effective way at the pan-European level. These tasks are: political

consultation, conflict prevention and management and arms control and verification.

With respect to the organisation of security within the Conference on security and co-operation in Europe (CSCE), three schools of thinking can be distinguished. The "minimalists" are worried about the institutionalisation of the Helsinki process with respect to security, because they do not believe that a security system with 34 States could really function. They are afraid that CSCE institutionalisation would undermine the EC and NATO. Consequently they prefer symbolic gestures—if, indeed, something must be done—like biannual meetings of heads of State, or annual meetings of ministers of foreign affairs. The "maximalists" believe that CSCE institutions could and should replace both NATO and the Warsaw Treaty Organisation. Others prefer a more realistic, middle position.

A representative of this approach is the Belgian Minister for Foreign Affairs, Mark Eyskens. He believes that the Helsinki process should be given more bite by the signing of a pan-European security charter, which would set out aims, principles (more specific than in the Helsinki Act) and the necessary instruments. In addition to giving the Helsinki process more bite, this school of thought would apply the principle of subsidiary levels to security. In other words, they believe that one should organize security tasks at a higher system level only when they are less cost-effectively managed at lower levels. This implies that a pan-European security system should not replace, but rather complement, NATO. The latter is considered the best available insurance until a better pan-European security system is developed. In addition to providing external security, it has done well in terms of enhancing internal security: the members have no military secrets; they are militarily transparent; they consult each other; they place their troops under a supreme allied commander; etc. The NATO Alliance makes it easier for the Europeans to influence American decision-making and *vice versa*. The conclusion of this school is that one should not dismantle NATO until something more effective has been created. Of course, the Alliance also has to become leaner and more European, to restructure its forces in a mutually more defensive defence mode and to play a more dynamic role in the creation of a mutually more reassuring security system.

The last variable concerns *developments in the rest of the world*. European security is dependent not only on changes within Europe, but also on outside developments. European security is a global

problem. Negative developments beyond Europe, such as the proliferation of chemical and nuclear weapons or missile technology, will determine, along with developments inside Europe, how far disarmament can proceed both within Europe and elsewhere. The greatest enemy, however, is poverty in parts of the third world. Human suffering and unrest provide fertile soil for authoritarian regimes and repression. The triple combination of authoritarian regimes, politically undeveloped societies and large-scale destructive power undermines stability in the whole world. Of the 111 armed conflicts in 1988, the most bloody were situated in the third world. Since the Second World War we have not had a third "world war", but many "third world" wars.

The third world will remain unstable and become even more volatile because of pressures for increasing democratisation. Whereas the 1950s and the 1960s were characterized by independence movements, the 1990s will be known for domestic emancipation movements. Human suffering is no longer attributed solely to external factors such as neo-colonialism, but to corrupt national regimes themselves. One notices, for example, among intellectuals, a growing self-critique. When black-white *apartheid* has faded, black-black exploitation will be more visible. Also, the end of the Cold War has contributed to the trend towards democratisation. Legitimacy and support have been granted to a country by others on the basis of whether it was inside or outside the communist camp. This approach is evaporating and public opinion expects that economic aid will be given to regimes which respect basic human rights. To secure our common interests, East and West should co-operate in trying to settle the many conflicts in the third world. Equally important is the continuation of economic and demographic co-operation and our support of the democratisation process. No country should be treated as an exception with respect to human rights. This is not idealism, but *Realpolitik*. Human rights and detente are mutually reinforcing.

Conclusion

Europe is in search of a new "grand strategy". The pan-European security community seems to be a concept whose time has come. It not only offers an attractive prospect for the future, but also indicates a number of very concrete pre-conditions. This concept is also a good remedy for those people who believe that it is all a question of arms control. As indicated, successful arms control is a very important and necessary variable, but it is, in itself, insufficient for creating a pan-

European security community. Researchers could contribute significantly to the future of security and peace in Europe by (1) further researching the complex interrelationship between the independent and dependent variables; (2) objectively monitoring changes in these variables and assessing the chances of success or failure; and (3) pursuing wide-ranging, innovative thinking about how these pre-conditions can be achieved; in other words, by searching and researching to find what methods at what levels will bring close the establishment of a pan-European security community.

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Post-'92 Helsinki: Towards an Operational Institution for Comprehensive Security

Not long after the signing of the Charter of Paris for a New Europe (21 November 1990), which proclaimed the end of the Cold War and institutionalised the Conference on Security and Cooperation in Europe (CSCE), it became apparent that the CSCE could not serve as the instrument for managing the changes it had, in conjunction with the multiplier effort of *perestroika*, helped to bring about on the continent. There were two basic reasons for this: first, the powers it had been given were more declaratory than operational; second, it had to contend with competition—for merely unthinkable—from other international institutions, such as the North Atlantic Treaty Organisation (NATO), the European Community, the Western European Union (WEU) and the Council of Europe, not to mention the United Nations at the height of its prestige. After a year and a half of uncertainty and importance, the CSCE now seems to be on the verge of political rebirth as a result of its forth "Follow-up Meeting" and its third summit, held at Helsinki. Entitled "The Challenges of Change," the Final Document adopted in the Finnish capital on 10 July 1992 shows how the CSCE has adapted to the true parameters of post-communist Europe, no longer mythical ones, as it did in the Charter of Paris. In the specific sector of security, it brings in three new elements: a definition of the concept of comprehensive security, attribution to the CSCE of operational means for conflict prevention, management and settlement, and the establishment of a Forum for Security Cooperation (FSC).

Concept of Comprehensive Security

From the beginning the CSCE, to its credit, had addressed security from a unified global perspective without, however, specifying it

explicitly. The Helsinki Document has filled this vacuum by referring expressly to the concept of "comprehensive security". From an analysis of the full text, the following three essential elements stand out.

In the first place, security must be *cooperative*. Starting from the premise of equal rights of States in security matters and of equal respect for their interests, the CSCE believes that no country should strengthen its own security (particularly through the use or the threat of force) to the detriment of other States. In direct application of this idea, the decision was taken to establish, as discussed below, the Forum for Security Cooperation, one of whose functions is to serve as a framework for ongoing cooperation and dialogue.

Secondly, the many facets of security are *indivisible*. The Helsinki Document directly links: (a) international peace-keeping to respect for human rights, pluralistic democracy and the rule of law; (b) security and stability to the development of economic, environmental, scientific and technical cooperation as well as social justice; (c) political pluralism to the functioning of the market economy; and (d) the stability of democratic societies to cooperation against terrorism, drug trafficking and other international organized crime.

Thirdly, security implies flexible global, regional, subregional and transfrontier *linkages*. Recalling that since 1973 it had represented a bridge between the security of Europe (now geopolitically defined "from Vancouver to Vladivostok") and global security, the CSCE declared that from now on, it saw itself as a "regional arrangement" in terms of Chapter VIII of the United Nations Charter, opening the way to direct collaboration with the United Nations in the prevention, management and settlement of conflicts. Similarly, it considered that the development of security in the Mediterranean region as well as changes in prevailing economic, social and political conditions there had a direct bearing on the stability of Europe. Hence the decision by the CSCE States to strengthen their multilateral relations, insignificant up to that point, with the "non-participating Mediterranean States" (NPMS)—Israel and the Arab countries of the region—and to link Mediterranean issues more closely with CSCE objectives in the future. The Helsinki Document makes no mention of even the remote prospect of a conference on security and cooperation in the Mediterranean (CSCM), modelled on the CSCE. It contents itself with announcing the holding, in 1993, of a modest "Mediterranean seminar", open to NPMS, the closing document of which will not contain binding commitments for the countries of the Helsinki process. Finally, it should be noted

that the CSCE has broken new ground here by including subregional and transfrontier cooperation (on the national, regional, local and community level) in the problems of security—the first because it presents the advantage of promoting the development of “pluralistic structures of stability”, and the second because it makes a contribution to overcoming socio-economic disparities, strengthening ethnic understanding and fostering good-neighbourly relations among States and peoples.

New CSCE Operational Means

Unlike the drafters of the 1990 Charter of Paris (who had believed that, solely because of the downfall of communism, Europe was becoming irreversibly “democratic”, “peaceful” and “united”), the drafters of the Helsinki Document 1992 have scarcely given way to euphoria. Though emphasising that Europe is experiencing a period of rich opportunity and promise, they recognize, none the less, that it is, in fact, in an unstable and insecure phase marked by economic decline, social tension, aggressive nationalism, intolerance, xenophobia, ethnic conflicts and the use of force to achieve the objectives of political hegemony and territorial expansion. They consider that the CSCE, which had been a tool for the peaceful transformation of Europe, should now become a tool for managing the effects—both positive and negative—of that transformation. Consequently, they adopted specific provisions to make the CSCE operational, on the one hand through strengthening its existing structures, and on the other through adding new instruments for the purpose of crisis prevention and management, and peaceful settlement of disputes.

The Helsinki Document 1992 confirms the inevitable rise of the Committee of Senior Officials (CSO) within the decision-making structure of the CSCE. As the agent of the Council of Foreign Ministers, the CSO is now responsible for the supervision, direction and coordination of all activities of the process, and has been granted new powers giving it a central role in early warning and political management of crises, peace-keeping operations and peaceful settlement of disputes. The CSO has the power of sending rapporteur missions or fact-finding missions and of undertaking good offices, mediation or conciliation activities. In short, the Helsinki Document provides for the integrated use of the various instruments and mechanisms available to the CSCE under the authority of the CSO, and especially of its chairman-in-office. The latter is now entitled to secure help from limited groups of States (a significant development

in a process which, until now, has prided itself on making use of only plenary working bodies), from "special representatives" (as is the United Nations practice) and also from his immediate predecessor and successor, who would form a troika with him similar to the one operating within the European Community.

The two major innovations decided upon in Helsinki are to establish the post of High Commissioner for National Minorities (an idea proposed by the Netherlands) and to authorize the CSCE to engage in peace-keeping operations.

Appointed for a three-year term renewable only once, the High Commissioner has been conceived as an instrument for averting a particular kind of conflict (involving national minorities) at the earliest possible stage. His role is to sound a very early warning and, if need be, start very early action when national minorities are caught up in tensions which seem to him likely to degenerate into a conflict that might affect the peace, stability and relations among States in the CSCE geopolitical area. As part of his mandate, the High Commissioner is expected to gather information on collective situations (but not individual ones) relating to national minorities, from whatever source (including the media and non-governmental organisations), and after consulting with the CSO, to go to the scene to obtain firsthand information, offer his unofficial good offices as needed to the parties directly involved, and make recommendations to the CSO that will allow him to help the parties resolve their differences. The Netherlands idea of authorising him to receive "petitions" was not approved; however, the information that the parties directly concerned are authorized to transmit to him in support of their position may include reports on breaches of CSCE commitments concerning the protection of national minorities. The High Commissioner's basic task is nevertheless to warn the CSO of a potential risk of conflict, or of the fact that a given situation is in the process of degenerating into a conflict, or that it has gone beyond his own capacity to act. This arrangement remains to be tested in practice, but it already clearly indicates that the CSCE is determined to develop a capacity to identify the root causes of crises and to envisage remedies before they become uncontrollable. Furthermore, the agreed arrangement has the advantage of allowing the CSCE to confront the problem of national minorities other than from the sole (and thus far inconclusive) perspective of human rights.

The inclusion of *peace-keeping* in the political panoply of the Helsinki process is much more far-reaching, in the sense that it

transforms it into a truly operational institution. The CSCE has endorsed three of the major principles underlying United Nations peace-keeping operations, namely: that such operations must be non-coercive, must be carried out impartially and must have the prior consent of the parties directly concerned. On this last point, it has been agreed that a peace-keeping operation can be decided upon only if the parties concerned have demonstrated their effective good will—particularly by cooperating with the CSCE and by entering into a process of peaceful settlement. The Helsinki Document 1992 is crystal-clear on this point: any peace-keeping operation must be conceived as a *complement*, of necessarily limited duration, to a peaceful settlement process—and in no instance as a substitute for such a settlement. Three specific conditions have been set as prerequisites for sending any CSCE contingents to the scene: the existence of an effective cease-fire, a written agreement between the CSCE and the parties concerned, and guarantees by the parties regarding the safety of the personnel involved in the operation.

The Helsinki Document defines peace-keeping operations in United Nations terms: any dispatch of civilian and/or military personnel in whatever numbers and under whatever arrangement (observer or monitoring missions and troop-deployment missions), with a view to supervising or ensuring the observance of a cease-fire, monitoring troop withdrawals, helping maintain public order, providing humanitarian and medical assistance, and aiding refugees. The salient fact to be underscored is that such operations can come into play following intra-State as well as inter-State conflicts occurring in the CSCE geopolitical area.

The CSCE can engage in such operations at the request of one or more of its participating States. The decision is to be taken (by consensus) by the Council or the Committee of Senior Officials—the latter, however, being responsible for the overall political supervision and control of the operations—with the benefit of assistance as needed from the Vienna Conflict Prevention Centre (CPC). Any CSCE State will have the right to take part in peace-keeping operations so long as its participation is not rejected by one of the parties concerned. The cost of the operations will be apportioned among all CSCE States according to the regular scale of assessments.

It will be noted that the CSCE may also decide, depending on the circumstances or the nature of the problem, not to conduct a peace-keeping operation itself but to turn to the United Nations. It also has latitude in calling upon NATO, the European Community, WEU or

even the Commonwealth of Independent States to help it carry out a peace-keeping operation. It proved rather difficult to adopt this provision because of a difference between France and the United States which can be summed up as follows: unlike the United States, France wanted to keep NATO from becoming the prime military arm of the CSCE. The Helsinki compromise gives it a large measure of satisfaction. The understanding is that when calling upon an outside organisation, the CSCE will take decisions on a case-by-case basis and after consultation with the States participating in the organisation concerned, and not with the latter as a body. Furthermore, the CSCE will continue to direct the operation, and any CSCE State may take part in it even if it is not a member of the organisation asked to help.

In other words, the CSCE has taken up the idea (once put forward by NATO) that the management of post-Communist Europe demands the concerted action of a set of interlocking European and transatlantic institutions. The Helsinki Document confirms this viewpoint by providing for the development of practical cooperation between the CSCE and NATO, the European Community, WEU, the Council of Europe, the United Nations Economic Commission for Europe, the European Bank for Reconstruction and Development (EBRD) and the Organisation for Economic Cooperation and Development (OECD). The provisions for collaboration in the field of peace-keeping obviously go beyond a simple measure of rationalisation: the collaboration lays the groundwork for operational complementarity, which, if it actually comes about, could help Europe to break out of the vicious circle that has been paralysing it since the breakup of Yugoslavia and the Soviet Union.

The Forum for Security Cooperation

The Helsinki Document may be said to have opened up the realm of disarmament to the CSCE: it can be credited with having put an end to the unfortunate dichotomy that had, since 1973, assigned the negotiation of conventional disarmament (mutual balanced force reductions (MBFR, later CFE)) to a few outside bodies restricted to the countries belonging to the military alliances, and relegated the CSCE to the negotiation of confidence-building measures and confidence and security-building measures (CBMs/CSBMs). The basic decision taken here is the one to establish a Forum for Security Cooperation in Vienna, beginning on 22 September 1992. Open to all CSCE States without distinction, the Forum will, under a Programme for Immediate Action, exercise three functions: negotiation, ongoing dialogue and reflection on the theme of conflict prevention.

The Forum's first function is to negotiate specific new conventional disarmament measures, provisions harmonising the obligations assumed under various international instruments in this area, bearing in particular on exchange of information, verification and force levels, as well as new CSBMs and "stabilisation measures" (in other words, constraining-type CSBMs), with a view to introducing more transparency in the military field, especially with regard to modernisation of the equipment and weapons for the forces of active and non-active units.

The Forum's second function is to provide a framework for consultation, cooperation and ongoing dialogue on security questions—such as the predictability of military programmes and capabilities, the non-proliferation and transfer of weapons, liaison, exchanges and contacts among armed forces, weapons conversion and the formulation of a military-political "code of conduct".

The Forum's third function is to elaborate on the theme of conflict prevention. The related provisions are vague in nature, reflecting an ambiguous compromise between the proponents and the adversaries of a substantial strengthening of the Conflict Prevention Centre, established in the CSCE as of 1991. The Helsinki Document does indeed envision a "strengthening" of the CPC. But it does so in cautious terms by stating that the CSCE States shall develop (at an undetermined future date) the CPC capacity to reduce the risk of conflicts through "relevant techniques" (not specified), or else in ambiguous terms through a reference to "cooperation in the field of verification".

The first two functions are to be exercised by the Forum sitting in "Special Committee" (assisted by subsidiary working bodies open to all participating States). The third will fall to the Advisory Committee of the CPC, sitting as the Forum, on the basis of guidelines developed for it by the CSCE Council of Foreign Ministers.

The Forum will have an executive secretariat which could also, if the parties concerned so decide, serve as the secretariat for the implementing bodies of the Treaty on Conventional Armed Forces in Europe and the Open Skies Treaty.

It should be noted that the Forum has been conceived in eminently pragmatic terms—as a variable-geometry instrument. It is, for instance, open to all CSCE States, but they are not obliged to join it. The Programme for Immediate Action remains open: it can be amended, supplemented or expanded by consensus, as early as the next CSCE

review conference (Budapest, 1994). The States taking part in that meeting are explicitly free to negotiate CSBMs as well as arms control or disarmament measures outside the Forum. Lastly, and above all, the area of application of the specific measures to be negotiated can vary greatly depending on their nature. The Programme for Immediate Action provides, moreover, that such measures could apply to specific regions or, if need be, to specific frontier areas.

Conclusion

The foregoing picture, an unquestionably positive one, must be tempered by two criticisms. The first has to do with the decision-making procedure of the CSCE, to which the Helsinki Document brings nothing new: the rule of consensus (and also the rule of "consensus minus one") still prevails—and this will increasingly constitute, for an institution with 52 member States, a factor making for unwieldiness and paralysis. The second criticism has to do with the peaceful settlement of disputes, an area with which the CSCE is particularly unequipped to deal: the provisions of the (non-binding) mechanism available to it here since the meeting of experts in Valetta (February 1991) apply neither to intra-State disputes nor even to high-stake inter-State disputes (territorial integrity, national defence, etc.). To fill this gap, France had suggested establishing a conciliation and arbitration court, a measure that implied a definite step towards the "juridicalisation" of the CSCE—a step that other States were not ready to take. For its part, the United States had submitted a far less ambitious counter-proposal focusing on conciliation. The Helsinki Document does not settle the debate. It goes no further than to recognize the need for a set of comprehensive measures aimed at expanding the options available to the CSCE in the matter of peaceful settlement, and to schedule the convening, in Geneva from 12 to 23 October 1992, of an initial meeting with a mandate to negotiate such measures. In the final analysis, these two criticisms carry little weight against the fact that the Helsinki Document has both endowed the CSCE with the means to carry out its policies and defined its role in relation to the other international security institutions.

POST-'92 HELSINKI EUROPE ON THE WAY TO A REGIONAL SYSTEM OF COLLECTIVE SECURITY

Dieter S. Lutz

After the second World War, the struggle for supremacy and apparently insurmountable controversies over social systems and

ideologies were obstacles to the establishment of a European order of security and peace, and led to conflict between the two blocs, the doctrine of deterrence and a race for destructive power, especially nuclear weapons. In the 1970s and 1980s, the arms race developed a dynamic of its own, always producing new arms spirals and intensifying existing conflicts.

At the beginning of the 1990s, the threatening situation altered entirely: the East-West conflict is now finished; the Cold War is over. Revolutionary changes in the States of the former Warsaw Pact have radically changed the economic, security and political map of Europe—and even of the world. It is true that the aftermath of the Cold War is still evident in many sectors; the problems that were created or partly superimposed by 40 years of antagonism are obvious. The economic and ecological differences between Western and Eastern Europe, as well as, in the security, political or military field, the existence of still huge armament potentials, are part of these effects. But above all, national, cultural and confessional antagonisms were apparently reactivated after the collapse of the authoritarian regimes. Therefore, it is perhaps correct to insist on starting to eliminate the military "waste" of the former East-West conflict and to establish an effective common European security system.

What should such a common European security system look like? In the following pages, I shall first advocate the establishment of a regional system of collective security. I shall then approach the role of existing institutions in the development or management of such a collective security system—stitutions such as the Conference on Security and Cooperation in Europe (CSCE), the North Atlantic Treaty Organisation (NATO), and the Western European Union (WEU). Finally, I shall ask if and by what means the Federal Republic of Germany is constitutionally able to participate in such a system of collective security—a question intensively discussed in Germany at present.

A Plea for a Regional System of Collective Security for and in Europe

Today not only are linkages in the economic, political and military fields constantly increasing, but dangers and crises (economic crises, environmental pollution, radioactive fallout from a civilian reactor accident or a nuclear war) also have an effect beyond frontiers. In such circumstances—at least following the nuclear reactor accident at Chernobyl—it has become clear that security can no longer be achieved

by focusing on only one aspect. A nation's own security must always also take into account the security of its neighbours. In short, security can no longer be found in confrontation; it must be achieved in collaboration. Security is common security.

The rationale in the "common" approach to overcoming dangers does not end when an emergency occurs. On the contrary, the idea of "common security", as an approach to overcoming conflicts, must be tested in times of actual conflict. Carried to its logical conclusion, in the long term common security leads to a system of collective security, which also recognizes the need to support its members militarily in emergencies.

The substance of collective security is not completely new. The idea, at least, of collective security has long appeared in treaties and legal norms, including article 52 of the United Nations Charter, article 11 of the former Warsaw Pact and article 24 of the Basic Law of the Federal Republic of Germany.

Looking back over past decades, one certainly cannot deny the relative failure of the idea of collective security in the United Nations. But it would be wrong to say that the idea has failed forever. On the contrary, at least since the end of the East-West conflict, there has been a need for a strengthening of the United Nations and a renaissance of collective security. An example of this is the unanimity with which, in the late summer of 1990, the international community condemned the invasion of Kuwait by Iraq, and the United Nations Security Council resolved on sanctions backed up with the threat of the use of military force. It is true that a whole series of disputes even before the Second World War damaged the effectiveness of the League of Nations, and even after 1945 they prevented the organisation of military security in the form of "collective security". This led to the formation of military alliances patterned on a self-defence or collective self-defence model. The problem issues included—and still include—besides the effectiveness of military forces, the clear identification of the aggressor, the capacity of the organs of the system of collective security (especially the Secretary-General and the Security Council) to decide and to act, the institutionalisation of compulsory arbitration, and so on.

So what is the way out? In the 1950s there was already discussion of the possibility of regional systems of collective security—permitted under the United Nations Charter—as a preliminary solution leading to a universal system of collective security. Today this possibility is still being discussed. However, the proposals for the formation of

regional systems faced and still do face the fundamental problems of achieving collective security. Still, it is easier not only to have an overview of these problems—because they are limited to a particular area—but also to deal with them in a political programme. And finally, with the recent discussions on common security and structural limitations on the ability to launch an attack (defensive defence), a common understanding has been reached, which must also find a way into the development and establishment of a system of collective security.

If it is true that every system of collective security is a logical and consistent development of the basic notion of common security, concepts like "supremacy" and "superiority" may no longer be understood in the traditional sense. "Superiority" in the system of collective security remains "defensive superiority", similar to that in a regime of common security. It is true that collective security does seek collective superiority, but it is aimed exclusively at dissuasion. Internally, within a regional system of collective security, in cases of conflict, this demands collective sanctions under conditions of renunciation of all weapons of mass destruction. Externally, however, dissuasion is very different from deterrence. It means reducing the perception of threat on the part of possible opponents by planning the armaments on one's own side so that, while superior, they are oriented towards defence and are structurally incapable of attack.

Similar clarifications and examples can also be found in connection with the functioning and mechanisms, or institutionalized guarantees, of a collective system of European security. If the mistakes and weaknesses of the League of Nations and the United Nations are not to be repeated in Europe at the regional level, this would seem to require:

- The formulation of contractual and institutional guarantees comprising a strict and automatic obligation to support any victim of aggression;
- The institutionalisation of a European security council with the undisputed right to restore collective security in the case of aggression;
- The establishment of supra-national forces and the possibility of legal recourse to national troops;
- The building up of institutionalized possibilities for compulsory, peaceful resolution of conflicts (where anyone who refused to accept arbitration would be an aggressor) and for peaceful change leading to common peace;

- And not least with a view to a new European order of peace in the wider sense: permanent institutions and a variety of consultative mechanisms for multilateral European collaboration in all areas.

On the Development of Euro-Collective Security *via* a Network of CSCE, NATO and WEU

Institutional Structures Within the Scope of CSCE

The first steps in this direction, especially from the perspective indicated in the first section, can be found in the statement made after the Paris meeting of heads of State on 21 November 1990. In the Charter of Paris for a New Europe,¹ the following new structures and institutions were resolved on as part of the process:

- A council, consisting of the foreign ministers of the member States;
- A committee of senior officials;
- A secretariat in Prague;
- A conflict-prevention centre in Vienna;
- An office for free elections in Warsaw (since January 1992, an office for democratic institutions and human rights).

However, these resolutions do not constitute more than the first cautious steps forward. If they are intended to lead to a European system of collective security in the long term, they must be developed and supplemented by a series of institutions and organs. One could imagine that they might be established along the lines of the chief organs of the United Nations (articles 7 and 8 of the Charter) and that they would function in accordance with articles 52-54. The minimum organs needed would thus be:

- An assembly of members (general assembly)
- A security commission (security council)
- A secretariat (secretary-general).

As a further main organ, a European court of justice or the International Court of Justice could assume judicial functions, and on a basis such as that in articles 47-51 of the United Nations Charter, a European general staff committee could be set up to support the security commission.

That these and similar considerations are not so far-fetched is demonstrated by the fundamental change in CSCE procedures initiated

during the second meeting of the Council of Foreign Ministers in Prague in January 1992. In the future, the Council shall be able to take decisions according to the "consensus-minus-one" formula, so that, contrary to the traditional concept of sovereignty, the State concerned shall forfeit its right of veto.

Military Substructures via NATO and WEU

Thus, by means of its January 1992 decision, the CSCE Council has finally established decision-making structures that make feasible even the employment of military means against an aggressor. However, the CSCE so far does not have any military substructures at its disposal. Mechanisms for recourse to existing forces and institutions, NATO and WEU, have yet to be established.

Suppose one starts by assuming that the military structure of a collective security system will be shaped by not only the renunciation of means of mass destruction, but also the following:

- The forces would be completely or partially supranational;
- The system would be oriented both internally and externally towards dissuasion;
- Most of the forces or their weapons would be oriented towards defence;
- A limited portion of multinational forces would be provided for the efficient execution of the assistance option. If that is the case, it becomes possible to implement the following steps as part of a process towards establishing a system of collective European security, even with the ongoing operation of NATO and WEU:
 - The formation of contingents of mixed nationalities, and the granting of a choice of military service in foreign (allied) forces as well;
 - The abandonment of the "national triad concept" while maintaining the effectiveness of the total system, that is, developing specialized national forces and dividing the work among them in such a way that the risk of aggression by individual States internally or externally would become non-existent or at least negligible;
 - The rearming of the main portion of forces with the most modern technologies to provide an effective but defence-oriented potential (structurally unable to launch an offensive);
 - The establishment of multinational rapid deployment forces.

If some individual States wanted to become pioneers in the process of creating a new European security system, there is a further possibility on the basis of the measures mentioned above: a unilateral, radical reduction of military capacity, armed forces and arms to about a fifth of what they are at present. Even a strong European security system (with a "mere" million soldiers instead of the 4-5 million hitherto) would hardly ask more of an individual participating State.

These and similar considerations may still sound Utopian. However, the revolutionary changes in East-West relations almost daily demonstrate that even Utopias can turn into reality. For instance, not only has the Warsaw Pact disappeared from the security-political map of Europe, but also NATO, as early as its London Declaration of 5-6 July 1990,² extended to Central and Eastern European States "the hand of friendship", and, in its Rome Declaration of 8 November 1991,³ NATO invited the foreign ministers of the former Warsaw Pact States to institutionalize their relations with NATO via a North Atlantic Cooperation Council (NACC). Finally, the admission of the States of the former Soviet Union, now the Commonwealth of Independent States (CIS), to the NACC on 10 March 1992 must be considered a historic act.

So the first steps towards expanding and transforming NATO from a limited military pact into a European security system have been accomplished, and the same is true with regard to the size, equipment, structure and mission of the armed forces themselves. The questions of the withdrawal of foreign troops and of the reduction of national forces are on the agenda, for which the withdrawal of Soviet troops from Eastern Europe and the Baltic States, the disbanding of the National People's Army of the former German Democratic Republic or the reduction of the armed forces of the Federal Republic of Germany from approximately 500,000 to approximately 370,000 troops can serve as examples.

Likewise on the agenda is, however, the establishment of new military structures, such as the creation of a bi-national German-French corps, or, as recently stated in the Petersburg Declaration of 19 June 1992 "on strengthening WEU's operational role". Appropriately implemented, the Petersburg Declaration will mark another milestone on the way to creating the military structures of a system of collective security in and for Europe via coordinating CSCE, NATO, and WEU. The Declaration provides for the assignment of military units to military missions carried out under the authority of WEU. Beside common defence, such missions would embrace humanitarian and rescue

operations, peacekeeping and the use of military force for crisis resolution, including peace-making measures. The military units would be composed of the armed forces of WEU member States, including, after consultation, armed forces assigned to NATO missions, and would be structured multinationally. It is uncertain whether German soldiers will become involved at all and, if so, what role they are going to assume beyond participation in humanitarian aid missions. According to general opinion, political will and constitutional legal requirements are contradictory. Consequently there have been calls for an amendment to the German Constitution, the Basic Law. In the following section it is argued that such an amendment is not necessary.

Participation of the Federal Republic According to the Basic Law

According to the intention of the Parliamentary Council which prepared the Basic Law in 1948-1949, the Constitution of the Federal Republic of Germany was to contain a vigorous peace imperative. That is why the drafters of the Basic Law created a unique constitution through a number of regulations. These regulations include the preamble, article 1(2); article 4(3); article 9(2); article 24(1),(2) and (3); article 25; and article 26(1),(2) of the Basic Law.

In 1948-1949, with these provisions, the Parliamentary Council expressly set out a new beginning. A political system that had not even refrained from offensive wars, mass murder and enslavement was to be abandoned, and the German people's will for peace was to become the hallmark of the Basic Law. The Federal Republic to be established was to be constituted as a value-oriented, democratic and peaceful State; new means and procedures were to be developed for its domestic policy and, above all, for its foreign policy. Would these new means and procedures comprise military forces and permit their eventual deployment outside the territory of the Federal Republic ("out-of-area")?

In 1948-1949, the Parliamentary Council did not provide for the rearmament of the future German State. The Basic Law of 1949 did not, however, expressly exclude it as a political option. Thus it was imperative to legalize the introduction of military forces through the amendments of 1954, 1956 and 1968 to the Basic Law. In other words, in spite of the vigorous and partially pacifist peace imperative of the Basic Law, the existence of armed forces was and is not prohibited. Their deployment, however, is subject to strict limitations. According to article 87(a)(1) of the Basic Law, the Federal Republic raises armed

forces only "for defensive purposes". According to article 115(a)(1), a state of being attacked (*Verteidigungsfall*) only exists in case "the Federal territory is attacked by armed forces or if such an attack is immediately impending". Moreover, according to article 115(a)(5) of the Basic Law, the Federal President is entitled to make the required announcement declaring a state of being attacked only after "the Federal Republic has been attacked by armed forces". A "mere" threat of such an attack is not sufficient and neither is the "mere" attack of another State's territory. The deployment of the Federal Army (*Bundeswehr*) for collective self-defence, which would be admissible according to international law and the Charter of the United Nations, would thus be illegal according to the Basic Law of the Federal Republic unless the state of being attacked had previously been declared. This applies also to missions within military pacts such as NATO.

Finally, except for the defence of the Federal Republic, armed forces can be "deployed only as far as the Basic Law permits it explicitly". Besides the provisions for emergency legislation (*Notstandsgesetzgebung*) which relate to domestic affairs and are therefore irrelevant here, the only exception to this restriction is provided in the Constitution by article 24(2) of the Basic Law. According to it, the Federal Republic can "for the maintenance of peace accede to a system of mutual collective security" and can "consent to respective restrictions of its sovereign rights".

However, "collective security" is, as was shown above, a technical term. In contrast to an order of peace based on human rights, which the Constitution otherwise pursues, or even to an alliance-type system, which aims at accomplishing or defending very concrete tasks, values, and goals of a socio-political and structural nature, collective security is a means of securing peace in the sense of preventing international conflict and assuming obligations of mutual assistance.

The means by which the Federal Republic could join a security system are not expressly stated in the Basic Law, nor does article 24(2) provide any information on this subject. However, as we have seen, the spectrum of possible sanctions within a system of collective security also includes military assistance. On the other hand, what applies to the system as a whole need not apply to all its members equally. The real possibility of assuming or readiness to assume obligations to render military assistance is not a precondition for acceding to a system of collective security; on the contrary, security systems without an absolute obligation to common military actions are quite conceivable. Even the requirement of "mutuality" in article

24(2) of the Basic Law does not demand absolute uniformity in the actual contributions of the various members. Already the Convention of Herrenchiemsee, the constitutional draft of which contained, in fact, all the essential elements of article 24 of the Basic Law, understood that by this regulation "*a prior obligation* is imposed on the German people". "After what has happened in the name of the German people, however, such a prior obligation, mat brings in its train corresponding actions by the other states, is appropriate".

From this formulation of the Herrenchiemsee Convention, one can at least deduce that in 1949 article 24 of the Basic Law neither regulated nor presupposed the existence of armed forces. Since the constitutional amendments of the 1950s and 1960s, however, the Federal Republic can no longer pretend not to have a *Bundeswehr*. On the contrary, since rearmament, the Federal Republic, like any other State, has to meet all the obligations it has assumed, including military ones. However, as long as a European System of Collective Security has not yet been established, the obligations of the Federal Republic are limited to the security system set up by the United Nations.

It can thus be concluded that the assignment of *Bundeswehr* units within the framework of a European or a global system of collective security would be admissible—even obligatory—under the Basic Law of the Federal Republic of Germany. For example, the Federal Republic might be requested by the United Nations Security Council, in accordance with article 43 of the United Nations Charter, to join in actions for the enforcement of sanctions in accordance with article 42 of the Charter. Given the Constitution's explicit orientation towards peace, this would apply, even more so, to the *Bundeswehr*'s participation in peace-keeping forces or other actions for the "pacific settlement of disputes" according to chapter VI of the United Nations Charter.

Finally, in order to avoid misunderstandings, I would like to emphasize the collective character of the sanctions and the absolute priority of civil means and measures over military ones. The "out-of-area" deployment of the *Bundeswehr* is admissible only within the scope of United Nations forces under the supreme command of the United Nations, that is exclusively as an act of assistance according to article 43 of the United Nations Charter. In the case of a European security system, similar conditions should apply. Furthermore, all other means of settling a dispute would have to be exhausted.

The Basic Law seeks to avoid the application of military force and to resolve international disputes by means of peaceful settlement.

Article 24(3) of the Basic Law makes this explicit by stipulating that the Federal Republic should join an international arbitration court. As this regulation does not use the expression "legal disputes" as does article 36 of the Statutes of the International Court of Justice, but refers in general to "disputes" including so-called political conflicts of interest, the basically peaceful character of this constitutional decision is clearly emphasized. It can at least be reasonably assumed that the range of application of the means of arbitration provided for in article 24(3) of the Basic Law ought to be as broad and basic as possible. This interpretation is confirmed by emphasising the character of arbitration as being "general, comprehensive, obligatory, international". In other words, arbitration should be universal or at least open to all States. In general, it should deal without constraint with all kinds of disputes, not only with those concerning juridical issues or subjects or particular States, and it should above all provide for the obligatory participation of all.

The deployment of the *Bundeswehr* within a system of collective security is thus admissible. However, given the interpretation of human rights found in the Constitution and the system of arbitration aspired to by the Basic Law, the use of military means can, in the long term, be no more than a last resort (*ultima ratio*).

POST-'92 HELSINKI: THE HELSINKI PROCESS: A SUCCESS STORY AND NEW CHALLENGES

Pertti Torstila

Record of Achievements

Few, if any, of the representatives of the 35 European and North American States gathered in Helsinki in the winter of 1972 for the preparatory consultations on a Conference on Security and Cooperation in Europe (CSCE) anticipated the enormous built-in power of the process they were initiating. In less than 20 years, the community of basic human values—democracy, the rule of law and human rights—hallmarks of the CSCE, had overwhelmed the false legitimacy of totalitarianism and opened the door to freedom and unity for all of Europe. The dramatic events of 1989 and 1990 were consequences of the social and economic failure of the communist system, but the Helsinki process accelerated this inevitable collapse in an unpredictably quick manner. The CSCE not only survived the Cold War, but also contributed greatly to its demise.

Governments and people, organisations and individuals—all those who during the past years prepared the ground for the radical changes—drew their strength from the rich potential of the Helsinki process. "Helsinki" symbolized a better future for countless numbers of people and they were not misled in their expectations. The CSCE has stood the test of time effectively.

The Helsinki process legitimized the right of a country to expect, indeed demand, that the external behaviour of States towards each other, and the internal behaviour of States towards their peoples, conform to the Helsinki Principles and other CSCE agreements. How a country treats its own citizens is now a legitimate concern of other CSCE countries. Expressing one's concerned opinion no longer constitutes inappropriate intervention in the internal affairs of other States. At the heart of the CSCE were not only national sovereignty, non-intervention in the internal affairs of States and consensus, but also, and especially, human rights and the right of self-determination. Major CSCE achievements—the Human Rights Mechanism, the Mechanism on Unusual Military Activities and the Emergency Mechanism—have broken the ice of absolutism surrounding the sensitive area of sovereignty and consensus.

Since the beginning of the Helsinki process, consensus has been the golden rule in the CSCE. No decision is possible if any participating State raises an objection. It is significant, though, that consensus does not equal unanimity. Consensus implies concessions and compromises by all sides. Maximalist national positions have time and again had to give way to a search for a common denominator. Quite often the level of ambition has had to be lowered. But once consensus has been found, decisions have rested on a solid foundation. The success of the CSCE is closely linked to the consensus rule, and rightly so. In today's new situations, however, the consensus principle is under review in many quarters. New challenges and risks may make it imperative to make adjustments here also if one wants to make the CSCE an effective instrument for settling crises and ensuring stability.

"Consensus minus one" is already a reality in cases where human rights and democratic principles are flagrantly violated. The question is raised: If all CSCE States have agreed to common values—as they have in the Paris Charter and the CSCE Helsinki Documents—why should they then have the right to prevent consensus in conflict situations where these very same values are violated in their countries?

The Cold War divisions, antagonisms and threats have ended, and with them the peculiar kind of stability they gave rise to. In their place, a Europe full of potential for democracy, economic well-being and human rights has arisen. The competition between the super-Powers has given way to dialogue and to a joint acceptance of both European and global responsibilities. Europeans are no longer afraid of massive military confrontation among their States, which can now embark on the search for security in Europe on an equal footing, as free and democratic societies.

The CSCE was designed to bridge the East-West division. It meant an opening, not a sanctioning, of the division of Europe, and played an immense role in the evolution of the relations across the dividing line, the "iron curtain". It helped to preserve dialogue and essential forms of cooperation during those difficult years. Now that there is no longer an East-West division, different problems are appearing and the CSCE is facing new challenges. Its contributions will be very much needed during the years ahead as well.

Future Potential and Challenges

The Europe of today has succeeded in reducing military threats and means of conflict. At the same time, there is ample evidence that the use of military force is no less unthinkable in the new Europe than during the Cold War. It may be possible to contain conflicts in Yugoslavia or in parts of the former Soviet Union, but they are more than just local or internal affairs. Many outstanding problems have become more visible with the disappearance of East-West confrontation. The actual and potential instabilities arising from economic, environmental and minority problems, nationalistic antagonisms and destabilising ethnic claims and conflicts undermine the fragile new system of security, which is characterized by complexity, interdependence and unpredictability. The indivisibility of security and the interrelationship of the three baskets of the Helsinki Final Act—military security, cooperation in the economic, scientific and environmental areas, and the human dimension—now have more significance than ever before.

Europe is undergoing a fundamental process of reorganisation, militarily, politically and economically. The elements in this new constellation—States, organisations and institutions—are redefining their relationships and functions in order to form a sound whole. There is little reason to believe that the profound changes of 1989-1990 will be consolidated in a short period of time. Rather, a fragile equilibrium

punctuated by outbreaks of instability will continue. Europeans will thus need an effective political forum to which they all belong.

The Helsinki process is being transformed from a process into a more organized structure with distinct institutions. At the Paris CSCE summit in November 1990, the CSCE participating States agreed that their foreign ministers would meet at least once a year as a Council. With the Council, the CSCE now has at its disposal a central forum for political consultations, a political body with a broad mandate. Besides, a Committee of Senior Officials (CSO) was established to prepare the work of the Council, carry out its decisions and review current issues. Also, a Conflict Prevention Centre (CPC) was set up to "assist the Council in reducing the risk of conflict".

These new institutional arrangements form the basis of a structured form of organisation. When equipped with effective instruments and mechanisms, and a commitment on the part of the participating States to use them, the CSCE will have a solid foundation for preventing, managing and resolving conflicts.

The new—and still imperfect—CSCE crisis management mechanism has had its first true test in connection with the crisis in Yugoslavia. Hostilities continue and no satisfactory solution has been found. This does not prove that the CSCE has failed or that its new crisis management system cannot be made to work.

The United Nations and the European Community (EC) cannot be blamed for the continuation of the civil war in Yugoslavia, either. We all know that the reasons for the tragedy lie deep in the history and culture of the area and that they are internal.

The Helsinki process is, *inter alia*, a "security system", but not in the sense of a military alliance. The CSCE is not a system of classical collective security, nor can it, in its present form, offer the degree of security that European States desire. States will continue to derive security from their own arrangements for self-defence, but a renationalisation of security policies should not be the goal. The CSCE provides the basis of a system of cooperative security, and the cooperative security measures developed within the CSCE complement the existing measures and offer new possibilities in the military area. Thus, security with others overrides the need for security against others.

The new order in Europe permits States to create jointly, on a cooperative basis, new security and policy options which were not

possible for individual States in the previous confrontational situation. But the new opportunities cannot be realized by one element alone, whether it be an institution, structure or process. Neither the CSCE, NATO, the North Atlantic Cooperation Council (NACC), the Western European Union (WEU), the EC, nor any other organisation for that matter, can, by itself, provide the basis for stability and security in the new Europe. Real security can only be guaranteed together, through mutually supportive cooperation and interaction of all interlocking institutions and forums.

We should use what works for as long as it works, and add what is needed, if and when it is needed.

The CSCE can meet the new challenges, if it is permitted to develop existing and acquire new operational capabilities, for example, through enhancing institutions and structures which were created to prevent, manage and resolve conflicts. This requires, *inter alia*, a clear division of responsibility between the Committee of Senior Officials in Prague, the Conflict Prevention Centre in Vienna and the Office for Democratic Institutions and Human Rights in Warsaw. In the Finnish view, the CPC as a permanent CSCE body has particular potential. Finland is convinced of the crucial role of the CPC in the area of conflict prevention and crisis management. The Council and the CSO should retain a dominant political role. The CPC, as the main implementing organ, should be assigned wider competence in the area of conflict prevention, security dialogue and implementation of arms control agreements. As a component in the emerging European security structure, the CPC provides a forum for the 52 States to "be present", that is, to be physically represented at all times. Ways to involve the CPC at an early stage of a given conflict should be elaborated. The conflict prevention and crisis management capability of the CSCE can be improved through the use of clearly defined instruments. Fact-finding, observation and monitoring of the implementation of cease-fire or disengagement agreements are essential parts of conflict resolution. The Helsinki Meeting 1992 made important headway in this field.

CSCE Peace-keeping

Peace-keeping, in cooperation with the parties involved in the conflict, is a forceful tool. The Helsinki Follow-up Meeting in 1992 took far-reaching decisions to enhance the CSCE's capability to meet future challenges.

These decisions will be as path-breaking as those taken in Helsinki in 1975.

Peace-keeping operations in Europe under the CSCE umbrella can, indeed, be performed by using various complementary methods, by groups of individual countries and in cooperation with different organisations and institutions. Some could be more effective in the area of enforcement, others in dispute-settlement. For this purpose all interested CSCE States could identify and train fact-finders, observers or peace-keeping units for conflict prevention purposes. A military organisation could contribute to the implementation of a settlement which is governed and controlled by other bodies. Expertise and resources of organisations, such as NATO or WEU, should be used in carrying out CSCE peace-keeping operations. An advantage of the CSCE not shared by other institutions is that it gives all European States their due weight in the affairs of the continent. The CSCE is the natural centre for European crisis management action.

CSCE peace-keeping requirements do not differ from the well-known ones developed through the experience of the United Nations. The fundamental requirement for CSCE peace-keeping is that parties to the conflict have the political will to seek a peaceful solution. A basic condition for CSCE peace-keeping clearly will have to be the consent and cooperation of parties directly involved in a given conflict. The parties to a conflict must refrain from and cease using force, and cooperate with the CSCE. As many potential European conflicts, both between and within States, cut across national and ethnic lines, procedures should also be worked out to involve those parties which ask to be heard and to participate independently of the Governments of participating States. National minorities and respect for their rights are of particular relevance today.

The CSCE and its potential to contribute to stability and security in Europe—including crisis resolution and the development of cooperative economic, political and security arrangements—must be viewed from the perspective of complementarity rather than substitution in relation to other institutions. The CSCE is a mechanism for linkage and not replacement. The experience and capabilities of relevant European and transatlantic economic organisations must be utilized. Affluent members of the CSCE should meet their responsibilities to facilitate the historic transitions now taking place in the economies of some of the CSCE participating States. Europe must not become a continent where a new division replaces the old. To overcome the obstacles to political and economic stability and development, those organisations and actors which are best equipped in their own areas of competence should lead the way. The unique

advantage of the CSCE is that it includes the existing participating States with their due weight in European affairs and will similarly include all the new participating States. The CSCE thus offers an overarching framework within which much can be accomplished.

The New CSCE Security Forum

The new CSCE security negotiations will take as their point of departure the mandate of Helsinki, the results adopted in Paris in November 1990, and in Vienna in 1992. The results, if implemented in full, are already impressive. The Treaty on Conventional Armed Forces in Europe (CFE Treaty) will effect deep, first-ever cuts in conventional armaments and bring about the desired parity. Together with the CSBM provisions, the CFE Treaty creates an unprecedented system of verification and inspection, military transparency and openness from the Atlantic to the Urals. The new negotiations do not have to begin from zero. The new forum rests on the solid and tested foundation created by the negotiation on conventional armed forces in Europe and on confidence and security-building measures (CSBMs), but negotiations will be based on a new mandate.

Experience has already shown that "operational" arms control, as the CSBM-type measures are sometimes called, opens interesting new avenues for the future. The operational approach will gain ground as interest in further negotiated reductions diminishes.

Disarmament as such will remain high on the list of priorities, but the commitments already agreed upon must first be scrupulously implemented. Negotiated results may prove to be complex in a multilateral setting between some 52 sovereign States. Yet, there is no lack of incentive for further measures, nor is there lack of scope. The capabilities of the immense amount of treaty-limited equipment and other weapons that remain in Europe even after the execution of the CFE commitments exceed the needs of secure stability. Interest in further measures in different corners of Europe is understandably real. From Finland's point of view, for example, it is important that reductions in armed forces extend to the neighbouring regions in northern Europe, as well.

A negotiating pattern which would satisfy every participant was not easy to find. Experience drawn from the CFE negotiations—although they took place in a bloc-to-bloc setting—is a concrete reminder of the difficulties encountered. In the mandate negotiations in Vienna and Helsinki (1992), several suggestions were made. No

single formula to meet the requirements of every single participant was possible. It proved—once again—very difficult to develop “the” reduction concept or criteria to assess national defence needs. But the mandate of the new CSCE Security Forum recognizes the existing different security concerns and interests of all participants. The negotiating procedure is based on a combination of approaches where the security needs determined by the countries themselves ultimately meet the concerns of others.

The mandate of the CFE negotiations included the provision that the security of each participant was not to be affected adversely at any stage. That provision serves as a good basis for future talks in a 52-State setting as well.

The military element of security continues to be indispensable. Yet, military power as such is not the only guarantor of stability. Thus, while the disarmament component of the future forum will be vital, equally important and ever more prominent will be confidence- and security-building. When moving beyond CFE 1 and 2, a different logic is needed. According to this logic, threats are minimized security concerns of others are taken at face value and cooperative security arrangements are sought.

The allegory of Gulliver in Lilliput is pertinent in this context, too. There is more to confidence- and security-building than the Stockholm-type measures on notification observation and inspection of military activities, or the Vienna-type transparency measures. Confidence-buildine also has a valuable non-military, or political, component. The two aspects together with the cooperative approach can open new innovative areas in the future negotiations.

Elements of new cooperative confidence- and security- building measures were already included in the 1990 and 1992 Vienna CSBM Documents. A detail exchange of information on military forces reflects the climate of decreased confrontation.

A consultation mechanism concerning unusual military activities is a useful new device. Enhanced contacts contribute to overall security and trust. A communication network has been established and can serve the CFE needs as well. Annual implementation meetings will be convened to monitor the fulfilment or promises made.

The implementation of these cooperative measures constituted the initial function of the CPC, which will widen its scope of activities in the years to come. It may eventually live up to its name and play a role in crisis prevention and management.

Insecurity is not rooted in the quantity of weapons only. Mistrust, suspicion and potential tensions will not be overcome through reductions only. The sustained dialogue on confidence- and security-building since the early years of the Helsinki process has decisively facilitated concrete steps toward significant arms reductions in Europe and offers a valuable example for other parts of the world.

CSBMs are not merely of marginal utility in the arms control process. They contribute to it by creating better assurances and by removing suspicions about the intentions of the other side. Without mutual confidence, efforts to achieve disarmament could not succeed. Confidence- and security-building, on the one hand, and disarmament, on the other, are inseparable twins.

However, CSBMs serve a more ambitious purpose than that of simply paving the way for concrete disarmament steps. Arms reductions are limited in size and in time. Once armaments have been reduced to an agreed level, measures to enhance transparency and openness as well as maintain and strengthen confidence and stability gain importance. Reductions must be supported by stabilising measures, measures to enhance transparency, and constraints. Innovation is needed in this regard.

A framework of regional cooperation will play an important part in the new comprehensive security setting. Regional cooperation will be able to respond more effectively to various local conditions and needs, allowing regions to tackle their specific problems together. Arms control should be adapted to the specific conditions of the different subregions, binding together their security interests. There is no lack of potential in this area. Selective regional measures and solutions embedded in an all-European CSCE framework present propitious perspectives and may become a real innovation of the post-Helsinki security negotiations.

Regional cooperation offers limitless possibilities in the economic and social areas as well. On the all-European level, the emerging system of security for Europe will have to take into account the political dynamics of Western Europe in the process of integration, the security concerns of the countries in Central and Eastern Europe and the future roles of the great Powers in Europe.

The Past is Prologue

"Security is not gained by erecting fences, security is gained by opening gates", Finland's President Urho Kekkonen said at the first CSCE Foreign Ministerial Meeting in Helsinki in June 1972. In 1992

in Helsinki again, 20 years later and after the disappearance of the old barriers, the CSCE enters its more operational phase. As it did in its first phase, the CSCE in its next phase will play a unique and critical role in building a durable peace and a just and equitable order in the new Europe.

There is nothing "final" about the Final Act. This historic document, drafted at a time when Europe was divided, contains the principles which are even now shaping and will continue to shape an undivided Europe. While many commitments and pledges still remain empty and unimplemented, many more have had a profound impact. The greatest strength of the CSCE will remain its moral strength, based on the Helsinki Principles and the fundamental human rights it supports for individuals in all participating States. The Final Act is a reminder of what remains to be done and an unfailing source of inspiration for further endeavours and actions. The Helsinki process will be judged by its success in providing the basis for the profoundest concept of human rights—freedom, justice, equity and security. The Final Act of Helsinki and the Charter of Paris together present an open-ended vision of a new and better Europe, committing all the participants with equal force to each of their provisions.

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Multilateral Confidence-Building Measures and the Prevention of War

We are living in historically unusual times. Just 50 years ago, a war began in Europe that had effects in almost all parts of the world and eventually consumed over 50 million lives before ending in 1945. Since then, for over 44 years the continent of Europe has been spared the scourge of war. Those 44 years have not been easy, and there have been occasions when the absence of armed conflict between nations has not necessarily meant peace. All too often confidence and trust have been lacking.

Even so, one has to look back a very long time to find a similar period in Europe when there was a prolonged absence of war. Furthermore, with the major developments of the past three or four years, I believe that it is true to say that the man or woman in the street is probably of the opinion that a major nuclear exchange, launched as a deliberate act, is less likely now than at any time in the past 20 years or more. Bilateral relations between the Super-Powers have improved immeasurably, and in their wake the development of regional measures within Europe is proceeding apace.

So much for the good news. It is not, however, the whole story. There are other, disturbing factors that should cause us to feel less self-satisfied.

The world's nuclear arsenal among the five declared nuclear-weapon States still amounts to over 50,000 nuclear warheads. The USSR-United States Treaty on the elimination of their intermediate and shorter-range missiles (INF Treaty) did not result in the decrease of fissile materials, as such, and the strategic arms talks between the Soviet Union and the United States—although they are well advanced—have not yet produced real results. In the mean time, other

nuclear-weapon States are in the process of increasing their nuclear capabilities and elsewhere weapons systems are becoming evermore technologically sophisticated. This is occurring at different levels, but in a broad sense across the whole range of military developments. At one end of the scale, advanced weapons are being either acquired or developed indigenously by some countries whose control arrangements may be insufficient during times of regional tension. At the other end of the scale, the development and activation of highly advanced computer systems, side-by-side with shorter warning times and significantly reduced periods for political decision-making, are creating new concerns at the possibilities of accidental, unintentional or inadvertent war.

Finally, there is also the functioning of what is often referred to in English as "Murphy's Law". In its simplest form the term "Murphy's Law" is used to describe one of the unerring lessons of life: namely, that despite the best of human efforts to prevent failure, whatever *can* go wrong, sooner or later probably *will*. Instances are all too many: Chernobyl, the Challenger space-shuttle, the Bhopal chemical plant in India, the train disaster in Bashkiria, USSR, the Exxon Valdes oil tanker in Alaska, United States, and numerous other accidents caused by technical failure or human error, from which no part of the world is free. None of these accidents should have happened but they did. Despite the existence of procedures designed to prevent human misjudgement or technical breakdown, modern life presents an almost endless list of disasters that have resulted in heavy loss of life or damage to property. Some have been natural disasters, but all too often human error or technical faults, or both, have been primarily responsible.

Given the nature of modern instruments of war—nuclear, chemical and conventional—and the pressures involved in political and military decision-making, why should we assume that those areas are insulated from accident or misjudgement? Notwithstanding the added precautions that are often in operation in the command and control of weapons systems, are they really sufficient? How can we be sure that the chances of disaster can be reduced to the absolute minimum, bearing in mind that even if the risk of the outbreak of war is very small, the consequences could be very much greater than the limited nature of the examples described above?

Recognising the existence of such questions, and the dangers to world peace in certain circumstances, in recent years the USSR and the United States have established a number of bilateral arrangements

to reduce the risks of misunderstanding in times of crisis or accident. To a very limited extent, certain other arrangements exist between other countries.

However, a number of commentators have pointed out the urgent need for improved multilateral arrangements. At the United Nations, there has been a growing recognition of the almost complete absence of multilateral measures to create a better sense of mutual confidence and to lessen the risks of war.

This seminar was one of a series of meetings held in conjunction with an extensive study of the multilateral means of reducing the risk of war undertaken by the Program for International Security and Arms Control of Yale University, "United States. Complementing the discussions that took place in Kiev are seminars in other cities on the desirability of multilateral war-risk reduction centres, innovative forms of peace-keeping to meet future needs and the role of the Security Council in preventing conflict in a changed and still changing world environment.

The objectives of this seminar were threefold: first, to explore the nature of these problems in a multipolar world with military Powers of different strengths, some of whom possess nuclear arms; secondly, to assess the value, feasibility and organisation of appropriate mechanisms and confidence-building regimes; and thirdly, to consider whether there is anything that the United Nations could, or should, do to improve the situation.

During the seminar considerations ranged over the kinds of situations that might arise in a world in which not just the United States and the Soviet Union but also the three other nuclear-weapon States and perhaps several other countries might have nuclear weapons; the pressures on decision-making caused by the complexity and speed of present-day war technologies; the possibilities of regional conflicts and the danger of escalation to a global level; the destabilising nature of certain offensive weapons or deployments; the value and nature of confidence-building measures between States, and the need for such measures in various parts of the world; the complexity and high costs of developing stable nuclear-weapons systems and procedures that do not lend themselves to accident or misuse; and non-proliferation issues.

In all these issues participants attempted to explore the multilateral dimension, partly because that is the aspect that the United Nations is designed to address, and partly because they recognised that we are

living in a dynamic, changing world which seems likely to be very different from the one we have known in the past 40 years.

In recent years the Secretary-General has consistently emphasised that the first function of the United Nations in international security is to prevent war from breaking out.

He has pointed out that recent serious crises have indicated the need to take timely and effective multilateral action before problems reach crisis proportions. To continue in the future to fail to utilize fully all the preventive capacity of multilateral organisations, he has said, would be foolhardy in the extreme. He has suggested that the Security Council should make fuller use of possibilities available within the meaning of the Charter to head off violence and facilitate the resolution of disputes *before* armed conflict occurs.

It is to that end that, with the help of the study being undertaken by the Yale University Program for International Security and Arms Control, ideas were put forward at this seminar on the desirability and practicability of establishing multilateral war-risk reduction centres and a multilateral nuclear alert centre.

The reactions to and comments received on those ideas will be of considerable value. It is not surprising that the ideas met with a somewhat mixed welcome—innovative suggestions usually do. It should not be forgotten that peacekeeping is not mentioned at all in the Charter of the United Nations and it, too, was resisted when it was first introduced as an idea, yet it has become recognised as a unique, valuable and highly successful instrument of the United Nations.

The discussions of confidence-buinding measures and the prevention of war revealed wide differences of perception, often closely related to the particularities of regional context. The circumstances applicable, for instance, in Europe are not repeated elsewhere and so solutions relevant in Europe are not necessarily applicable to regional situations in other parts of the world. However, the issues have multilateral dimensions which are quite outside the straightforward bilateral concerns of the Soviet Union and the United States. It is to be hoped, therefore, that the exchange will only be one of several that will enable the United Nations to develop its capacity to respond in appropriate ways to the task of taking collective action to maintain international peace and security.

This seminar would not have been possible without the generous support and unfailing assistance of the authorities of the Ukrainian

SSR, the Ukrainian Peace Committee and the Soviet Peace Committee. On behalf of the United Nations in general and Yasushi Akashi, the Under-Secretary-General for Disarmament Affairs, in particular, and on behalf of all participants, I wish to record my very deep appreciation for their help.

MULTILATERAL NUCLEAR DIPLOMACY

The existence of several nuclear States in addition to the United States and the Soviet Union creates new uncharted security problems. While there is much discussion of the growing uselessness of nuclear weapons, and even some belief that we are about to enter a post-nuclear world, the facts suggest something quite different.

Broadly-speaking, two directions of research and discussion can be followed in thinking about all this. First, at a structural level the international system appears to be evolving into one where several States possess nuclear weapons, and where this is a more or less accepted part of the system. The geopolitics of a great-Power system built on nuclear deterrence, but where lesser Powers also have nuclear weapons, has received scant attention.

A second line of study is more tactical. It focuses on how crisis management, paths to war, and accidental and inadvertent actions might precipitate or worsen conflict. Are crises involving more than two States somehow harder to control than "ordinary" Soviet-American crises? How might confidence-building measures worked out for two nuclear Powers function in a multi-nuclear world?

It is useful to define a "nuclear State" in this discussion as one that has its own nuclear weapons or those of another nuclear Power stationed on its territory (the case of the two German States). Even States that do not have any atomic weapons on their territory can be considered nuclear States if their alliances, geographic position, military infrastructure, or history put them in a crossfire during a crisis. For example, country X may have tested a bomb, and this may create strong suspicions that it has developed a covert arsenal of nuclear weapons. This history may cause opponents to launch a pre-emptive attack on country X in a crisis in anticipation of its potential nuclear retaliation even if, in fact, it has no nuclear weapons.

Nuclear Multipolarity

The phrase "multipolar world" is often advanced to describe world power relationships as they are evolving towards the year 2000. The

metaphor of a multipolar world connotes images of the balance of power in Europe in the nineteenth century. In the modern version, the great Powers are anticipated to be the United States, the Soviet Union, China, Japan, and an integrated Western Europe.

After World War II, the United States created a coalition to respond to the threat of Soviet aggression. First the United Kingdom and then France developed independent nuclear capabilities. Initially the United States had mixed views about the impact of this on international stability. Secretary of Defense Robert McNamara argued in his famous Ann Arbor speech in 1962 that independent nuclear capabilities not under American control were a bad thing, because they introduced too much uncertainty into the security situation. Specifically, McNamara argued that strategic uncertainty about the behaviour of independent forces could act as a wild card or even as a catalyst to escalation at a time of crisis.

When China "went nuclear" in 1964, another independent arsenal came into being. At first, the Chinese threat was considered to be directed against the United States, and in fact was the justification of President Johnson's anti-ballistic missile programme. Later, however, the Chinese force was seen to have desirable effects for American security.

The United States eventually understood that it was the beneficiary of these new, independent forces because they all helped to contain Soviet power. The evidence for this is now overwhelming. Washington's sharing of design technology with the French, its open support of the British force, and improvement of relations with the Chinese may have started out for different reasons, but all these elements worked to encircle the Soviet Union with nuclear States.

If one takes a realist's view of the international system, it is hard to see how much of this could be reversed in the future. The French and British, for example, have been willing for decades to drastically reduce their conventional forces while expanding their nuclear arsenals. Economically, it can be shown that these forces are "cheap", certainly compared to conventional forces, but even relative to countries with a GNP of \$.6 to 1.0 trillion. Domestic politics in each of these nations is different, but both point to almost no policy reversal on the nuclear question. It is now hard to see how the United Kingdom could abandon its nuclear forces even if a unilateralist opposition party came into office. Quite aside from military issues, London would have to consider the consequences of having France as the only nuclear Power in an

integrated Western Europe. With major strategic questions looming in the future (such as the German question, the restructuring of the North Atlantic Treaty Organisation (NATO) and European defence, and relations with the Eastern bloc), London would lose a great deal of clout on these matters if its nuclear force were abandoned.

In East Asia, China shows only signs of expanding its nuclear forces. Beijing faces an uncertain relationship with the United States and, in addition, several potential long-term threats. There is always the Soviet Union, but there is also Japan, which today has a not insignificant defence programme and is capable of doing much more if political conditions change.

It is true that the United States and the Soviet Union seem to be moving towards a treaty on strategic arms reductions (START) that could reduce the weapons in each arsenal by something like one third. Some commentators see this as a step towards the elimination of nuclear weapons altogether, or as a move towards a post-nuclear world. On the contrary, the view advanced here is that the Eurasian and global military balance is evolving into an interlocking multiple nuclear deterrent system.

The essence of the problem of multilateral nuclear diplomacy and of multi-nuclear crisis management and confidence-building is thus structural. It is built into the international system at a deep level. In a certain way this makes more tactical questions of crisis management, avoidance of accidents, and co-ordination of rules of the road even more important, because of the inevitability of a more nuclear world. While there is a widespread sense that the Cold War confrontation between the United States and the Soviet Union is ending in its classic manifestations of forward defence, "Pactomania" and American-led containment, the features of a multipolar nuclear world system have been harder to discern.

History can be a guide. Classically, a multipolar system, such as existed in the nineteenth century, has been good not at preventing war, but at preventing great-Power war. Small wars, in fact, were frequent in the nineteenth century. The problem with trying to carry over this feature of the system to the future is that "small" wars can be nuclear, because proliferation has not stopped with the great Powers. India has exploded a bomb, and suspicions exist about a number of other States. Insulating the security of the large Powers from that of the small Powers—something done so well in the last century—may be far more difficult an undertaking in the future.

In the nineteenth century treaties bound allies together. To hedge against the possibility that someone would go back on a treaty or to guard against secret agreements that would undermine security, large armies and navies were built. Today the United States is in a very different position. Significant United States forces are deployed on the territory of two of the new great centres of power, Japan and Western Europe. This reinforces confidence in the behaviour of the States concerned in times of crisis. It will be very interesting to watch American forward defence in the coming years. While some reductions may be anticipated, it may be that overseas deployments will be maintained even in the face of a declining Soviet military threat, both as a hedge against its return and as a mechanism to maintain United States leadership.

Another feature of a multipolar world is the extent of the integration of the security systems of the actors. In addition to diplomatic alliances, electronic alliances can bind States together. Through a network of complex command, control and intelligence systems, national bureaucracies can be tied together far more tightly than they can be diplomatically. Generally, these command systems are considered from the viewpoint of technical efficiency—whether data can be transferred or whether one system interferes with another. But large command and control systems are the ties that bind military establishments together. They focus expectations, distribute information that shapes political perceptions, and integrate the norms and standards of one military institution with another. Importantly, they also can check an opponent from taking undesired actions. Such integration is no guarantee of co-operation, but it is an important additional factor in forging an alliance into a meaningful whole. Without it, opportunistic behaviour is more likely, as demonstrated in the nineteenth century experience.

More Specific Considerations

The focus of this seminar is multilateral confidence-building measures and the prevention of war, and it therefore seems wise to survey some of the specific dangers that would accompany a world of multiple nuclear Powers, both small and large. Some of the new issues for crisis management and command and control that emerge from this are the following:

- Forced nuclear alerts. If the Soviet Union goes on alert in the Far East against the United States, for example, then so must China. While it is best to avoid such crises, it is also necessary

for nuclear States to understand the consequences of their actions in brandishing their forces.

- Attack assessment. A bomb goes off, but it is not clear who fired it. This could be a special problem in a number of areas: in North-East Asia and the Korean peninsula or in Europe. Proposals have been made in the past for the superpowers to put "signatures" on their weapons so that they can be identified, and this may make much more sense in a multi-nuclear world.
- Multilateral communication problems in crisis. The problem here may be less one of circuitry and bandwidth than one of information overload. A multilateral crisis management centre has been proposed in various quarters. This may make sense in helping to think through the problem, and it may be that such a centre would simply be an annual conference of experts and officials to discuss the problem.
- Increased chance of, or at least new kinds of, accidental war. Many experts have worried that an accidental nuclear detonation is more likely to come from one of the new States possessing these weapons than from the United States or the Soviet Union. It took many years for the United States to work out systems for personnel reliability and permissive actions links.
- More instability, e.g., incentives for pre-emption, defined here in the relatively narrow form of the reciprocal fear of surprise attack rising as more actors possess nuclear weapons. This is the case where States that are suspected of having weapons could draw fire from an opponent.
- More chance of catalytic war. This was an early theoretical fear in the nuclear age. Interest in it has pretty much declined in recent years, but it may come back as a danger with more States having nuclear weapons.
- A "successful" use of nuclear threats. Most of the time we think of the massive destruction accompanying any nuclear use. However, a more insidious problem might lie in a successful threatened use that reaped enormous gains for the side that threatened. This would be an object lesson to other States and might speed up proliferation incentives. Perhaps only an organisation of the major Powers could act collectively to reverse the gains from such actions, although this would present large co-ordination problems of its own.
- Defence may look more attractive. An accidental launch protection system has already been advanced in the United States

Congress, and with primitive threats, new support for concepts like the Strategic Defense Initiative (SDI) may increase. Moreover, as the warfighting image of SDI recedes, a new interest in strategic stability through defence may increase.

Dealing with these problems seems much more difficult than diagnosing them. But prescription is impossible without prior diagnosis. What this leads to is a proposal to first catalogue and discuss the issues, temporarily postponing solutions. Third parties might play a role, both in defining the problem and in offering insights into how a safe system could be worked out. One of the problems with complex issues is that experts can get too close to them, and fairly obvious points and ideas get lost. Third parties can bring a fresh perspective that is badly needed.

Where does this leave us? We can propose solutions that, at present, may not be feasible or may seem illusory and unrealistic. We can put the problem within a framework, something that is necessary before solutions emerge, or we can do nothing, and muddle through blind to the issues. But the time to focus on this problem is at the early stages, because the experience of the super-Power competition shows how difficult it can be to disentangle an arms race that has proceeded for decades. It could be a lot more important to structure this system in even small ways now than to try to undo large problems later.

TOWARDS A NEW MODEL OF SECURITY

I am honoured to welcome you who are participating in this widely representative international seminar that the United Nations is sponsoring within the general framework of the World Disarmament Campaign, and wish you effective and fruitful deliberations.

The fact that the seminar is attended by noted political, military and scholarly figures and leading officers of the United Nations Secretariat proves that the process of United Nations renewal is restoring the ability of this unique Organisation to be at the centre of the co-ordination of the security interests of States.

The principles of new political thinking guiding our State's behaviour in international affairs have been approved by the Congress of People's Deputies of the USSR, the supreme governmental body in our country. High among them is the strategic principle of ensuring our State's security primarily by political means, relying on the authority and capabilities of the United Nations.

Rejection of dogmatic perceptions, responsibility in considering all developments in the international arena, and advance from confrontation to a thoroughgoing search for a balance of interests and ways to "de-ideologize", democratize and humanize relations among members of the world community are the distinctive features of the new Soviet approach to foreign politics, an approach that grows in an integral way out of *perestroika* and the related processes now going on within our country.

In its general form, our philosophical and conceptual vision of the problems central to modern times was presented in high relief by Mikhail Gorbachev in his address to the United Nations General Assembly at its forty-third session. His speech laid down a long-term foreign policy line that will seek to bring inter-State relations into harmony with the realities of an evermore integral and interdependent world, and ensure the concerted creativity and co-development of States as they build a peaceful period in human history—a goal which, we are sure, is feasible and realizable. At the same time, the Soviet leader's statement in the United Nations also invited our partners to internationalize the dialogue and the process of negotiations and to take without delay concerted action to strengthen international security in a comprehensive way.

New political thinking has made for a healthier international situation over the last few years and for decisive advances in strengthening security along the foremost line of its progress: the sphere of disarmament. The ongoing limitation of arsenals has become an essential component of the positive changes that have allowed us to push away the threat of war and shift the emphasis to co-operation, mutual understanding and negotiation.

In essence, we are all eyewitnesses of and participants in the ongoing process to develop a new model of security—one attained not by increasing armaments but, on the contrary, by reducing them in a mutually acceptable way, and based on strict observance of the Charter of the United Nations. The history-making Treaty on the elimination of intermediate- and shorter-range missiles (INF Treaty) is being implemented and physical destruction of the two classes of nuclear weapons addressed therein has commenced. Efforts to draft a convention banning and abolishing chemical weapons have entered the final stage. A great deal has been done towards concluding a treaty on 50 per cent cuts in the strategic nuclear weapons of the USSR and the United States while maintaining the anti-ballistic missile (ABM) Treaty. The outline of a common approach to the negotiations

on the reduction of conventional forces in Europe is beginning to appear and moves are being made towards agreement on a new set of complementary confidence- and security-building measures to diminish the risk of confrontation between the two largest military alliances.

Strong impetus was given to these and other positive trends during the high-level meetings that Foreign Minister Eduard Shevardnadze had in September in Washington and Wyoming.

As a result, one sees clearly the prospect of turning from overarmament to reasonable sufficiency, of giving States' military doctrines a defensive thrust, and of appropriately restricting armed forces within the stringent framework of requirements for defence. Moreover—and this is important—all channels must be brought into play to allow a restructuring of the military component of the security of States, at both the multilateral and bilateral levels: measures that involve mutual action and those that involve unilateral action.

Mindful of harmonising word and deed, the Soviet Union has taken a number of unilateral strides to revise its military doctrine in an unambiguously defensive spirit. In the period 1989-1990, the Soviet Union's armed forces would have been reduced by 50,000 men, or by 12 per cent. Alongside the wide-ranging reduction of the armed forces, a change in their structure will also take place. In particular, the number of army divisions will be halved and the current ratio of offensive versus defensive capabilities will be revised. The Soviet Union has embarked on the withdrawal of its troops from the territory of other States. The first steps are being taken in selectively converting military manufacturing in the USSR and shifting a part of it to address civil needs. There will be a 19.5 per cent cut in the manufacture of arms. The Soviet Union has published data on its military budget, presently at 77.3 billion roubles, and had started its reduction, had planned to bring it down by one-third or one half by 1995. An impressive build-down in armed forces, armaments and military budgets will be accomplished by the Soviet Union's Warsaw Treaty allies.

I see the West responding with similar moves in matters of disarmament. They should not be underestimated. New opportunities are opening up as the result of negotiations and a new quality that is emerging in our relationships.

Surely one neither creates a safe world nor safeguards oneself against the risk of war overnight. The process will have its own stages and its own sequence of actions. Care must be taken, therefore, to ensure security during the process of negotiations—every stretch of it—and

to agree on the mechanisms to maintain peace at acutely reduced levels of military confrontation.

Awareness of the catastrophic consequences of a possible nuclear exchange has led the USSR and the United States to a shared recognition that there will be no victors in a nuclear war and that such a war must never be allowed to break out in the first place. A non-nuclear war among other major States or their coalitions would take on a similar—and scorching—character, given the capabilities of present-day weapons. I believe that such a war, should it erupt in Europe, would spell death for the continent with its high population density. The large numbers of nuclear and hydropower plants, chemical production facilities and other similar installations would, if destroyed, pose an immense danger to human life.

Today, the arms race and the pursuit of military superiority are no longer capable of giving anyone a political, military or technological advantage. The military potentials accumulated hitherto are at a level that ensures only equal danger now. Moreover, efforts to push the technological ceiling higher would be fraught with unpredictable consequences, setting the arms race out of control and destabilising the strategic situation. This applies, first and foremost, to plans for deployment of defensive space-based systems.

Furthermore, the colossal complexity and speed of present-day weapons, which leave a drastically shortened time for political decision-making and response, increase enormously the risk of an accidental outbreak of war. Finally, the danger that regional armed conflicts will escalate to a global level still looms large today.

For these reasons, the subject of our seminar, "Multilateral Confidence-building Measures and the Prevention of War", is extremely timely.

It is probably legitimate to say that the question of confidence is central to diminishing the risk of war. It is a broad policy of confidence-building that is called for to draw the final line under the Cold War, to help the world community abandon enemy images and to promote the restructuring of the military doctrines and war potentials of all States along defensive lines. It is the burgeoning confidence in East-West relations and, in general, the strengthening of sound and constructive fundamental principles in world affairs that have done a great deal to create the atmosphere in which real disarmament can take off. Confidence, verification and openness are the catalysts of disarmament that stimulate the political readiness of parties to seek and identify

measures of self-restraint and reductions in armaments conducive to reliable national and common security.

To ease the oppressive burden of worry and uncertainty that has wearied humankind is the objective of measures to reduce the nuclear danger. The Soviet Union and the United States already possess useful experience in this field. As we know, they have concluded a series of agreements to this end. Also, the Soviet and American Nuclear Risk Reduction Centers have been set up and are effectively operating now. Other mutual commitments have also proved their usefulness, including those which ensued from the 1971 Agreement on Measures to Reduce the Risk of Outbreak of Nuclear War and several other accords. It seems worthwhile to explore ways of extending this experience to all the nuclear Powers, of giving the United Kingdom, France and China access to the mechanisms of averting the nuclear danger.

An already tried and tested armamentarium is to be found in the Soviet-United States Agreement on the Prevention of Incidents on and over the High Seas (1972). Proof of this is found in the fact that in the last few years the Soviet Union has signed similar bilateral agreements with the United Kingdom, the Federal Republic of Germany and France. Evidently the time has come to develop a multilateral agreement on that subject—a task in which quite a number of countries affiliated with the North Atlantic Treaty Organisation (NATO), the socialist States and the non-nuclear group have a vigorous interest. Specific elements of such a multilateral agreement were proposed by Sweden last May in the United Nations Disarmament Commission. Conclusion of such an agreement would seem to be a logical step. The conclusion last June of the Soviet-United States Agreement on the Prevention of Dangerous Military Activities constitutes a new contribution to the reduction of war risks. Experience of its implementation is, of course, still to be gained, but the opinions of participants at this seminar would definitely be useful.

The establishment of centres for the prevention of military conflicts and sudden attacks could become an efficient method for the maintenance of regional security. Such centres should play an important role in regions with especially high military confrontation, e.g. in Europe.

The proposal to establish a European centre for the reduction of military dangers and the prevention of sudden attacks, which would serve as a forum for co-operation between NATO and the Warsaw Treaty member countries, has become a subject for productive dialogue.

Such a centre, working on a permanent basis and performing informational and consultative functions, could serve as a useful structure for increasing the security, predictability and stability of peace in Europe and for removing the sources of confrontation between States in military affairs. Countries of other regions might see this as a fruitful concept, considering that a multilateral approach is at the heart of any regional efforts to strengthen non-military safeguards of security.

From both the philosophical and the practical standpoints, efforts to reduce military dangers would benefit from an impetus to the process of reaching agreement on defensive strategies and reasonable sufficiency for defence. It is important to compare military doctrines, analyse their nature and consider their further evolution in order to reach a better understanding of each other and to ensure that these doctrines are based on defensive principles. The Vienna negotiations are showing evidence of a mutual understanding of the need to have a meaningful discussion of issues concerning military doctrines. The Soviet Union supports the proposal of India to discuss these subjects at the United Nations or at the Conference on Disarmament.

I would like to mention specifically the issue of nuclear deterrence. The Soviet view is known: genuine security can be reached only through eliminating nuclear arsenals. At the same time, it is evident that nuclear dangers can be removed only gradually, and the next steps will not require a radical change in anybody's position. The idea of minimum nuclear deterrence has been proposed by the West. It may be a step forward. It is important to reach a common understanding of minimum nuclear deterrence in order that both sides can feel secure at each step of disarmament.

It is necessary to use fully the United Nations potential in the prevention of military risks and the building of confidence. This international Organisation has everything necessary to play a unique role as the world moves towards a peaceful period, and it should become one of the guarantors of stability. Therefore, the United Nations faces both strategic, long-term, and immediate, urgent tasks to increase its efficiency in reducing military dangers.

The settlement of regional conflicts has important significance for reducing global military risks. A more active peace-keeping role for the United Nations and the growing responsibility of the Security Council and the Secretary-General are now extremely important.

The United Nations peace-keeping operations have proved useful. United Nations military forces and military observers are an integral

part of international practice, and constitute an efficient way of carrying out the principal task of the Organisation under its Charter—the maintenance of international peace and security. The 1988 Nobel Peace Prize to the international forces of the United Nations is a testimony to their growing authority, a credit to their courage. Comprehensive proposals for further increasing the efficiency of United Nations peace-keeping operations were presented by the Soviet Union at the forty-third session of the United Nations General Assembly and have become part of a promising dialogue on this subject.

But today's task is not only the settlement of existing conflicts, but—what is more important—the prevention of new conflicts, reduction of the risk that these disputes could grow into armed hostilities. Therefore, the role of the United Nations in reducing military dangers should be seen in a broad context of measures for the prevention of threats that could damage world development and destabilize international relations. Thus, a shift from the United Nations present-day crisis diplomacy to preventive diplomacy is necessary in all spheres of international relations: military and political, economic, environmental and humanitarian.

In the view of the USSR, preventive diplomacy should be based on a profound and objective understanding of the real situation in all spheres of international relations. That is possible only with a fully developed, operational, reliable system of monitoring, with data collection and processing, and with great transparency and openness in all spheres. An increased mass of objective data, concentrated in the United Nations, would greatly enhance the predictability of developments and raise the possibility of identifying in advance and neutralising threats to peace and security. Such a resource, available to the United Nations, would in itself play a stabilising role.

Like other States, the Soviet Union welcomed the decision of the United Nations General Assembly at its forty-third session to carry out an in-depth analysis of proposals concerning United Nations fact-finding activities, and actively joined in this work. I believe in particular that the establishment of United Nations monitoring points in hotbeds of tension world-wide would contribute to the Organisation's ability to conduct fact-finding operations in conflict-ridden areas.

Preventive measures could be made more effective through verification (alongside monitoring). All States not only should be assured that the provisions of an agreement vital to their interests are being complied with, but should also directly participate in the

verification process. Therefore, the USSR, in co-sponsorship with other socialist countries, has proposed setting up under the aegis of the United Nations an international agency for monitoring and verification, and it has invited all States to discuss the best way of realising this project. It is obvious that such an ambitious project should be carried out step by step, with all views carefully considered.

A similar aim is pursued by those States that have proposed setting up under the United Nations an international system of verification or a register of arms sales and supplies; others have suggested establishing international and national expert groups for estimating the prospects that the latest technological breakthroughs will be used in the military field. Very timely and important is Finland's initiative for creating a data bank on the issues of disarmament and arms control. The USSR is prepared to make some information, collected by Soviet commercial satellites, available to such a data bank. The proposal put forward by France for creating an international agency for surveillance satellites is a promising idea. Thus the United Nations agenda contains a whole range of specific, complementary proposals for increasing the Organisation's contribution to war prevention.

The Soviet Union particularly appreciates the Secretary-General's initiative to establish under the United Nations a multilateral centre for reducing the threat of war. This idea is ripe for translation into practice. Specifically, there already exists in the Secretariat the organisational machinery which could serve as the basis for such a centre. It seems appropriate that, at the first stage, the centre would deal with reducing threats arising from regional conflicts fought with conventional weapons. It could also be expected to undertake the speedy dispatch of the Secretary-General's fact-finding missions to the areas of international conflict. On the basis of these missions' reports, the Secretary-General could hold consultations with the parties concerned and use his right to address the Security Council. It would be wise to examine how to establish appropriate communication lines between the centre and the capitals of the permanent members of the Security Council and the Chairman of the Non-Aligned Movement.

It is important for these new trends to take root, to become irreversible; it is vital to keep and increase the momentum of the negotiating mechanisms. The Soviet Union is prepared to do that. Together with all other nations, nuclear and non-nuclear, big and small, the Soviet Union participates in the search for understanding and solutions on the bilateral as well as the multilateral level. It is also significant that the human, moral factor is becoming increasingly

important in international politics. Broader participation by the public in world affairs gives scope to the process of internationalisation.

I hope that this seminar will make another contribution to exchanging experiences and searching for the best way in which to build confidence and prevent war.

I would like to thank the organizers of the seminar—Under-Secretary-General Akashi and officers of the Department for Disarmament Affairs, and the Foreign Ministry of the Ukrainian SSR, which co-operated with the Soviet Peace Committee to create this comfortable atmosphere for our coming "brainstorming" session.

RISKS OF OFFENCE-DOMINANT FORCE STRUCTURES AND STRATEGIES

This paper argues that certain military doctrines—in particular those designed to deter war via offence-dominant force structures and associated war-fighting and war-winning strategies—may increase tension, suspicion and hostility, and intensify the risk of crises occurring and of inadvertent war. Success at the negotiations on strategic arms reductions (START) in reducing the number of super-Power strategic nuclear weapons will not necessarily reduce such risks. Indeed, what might be called "technical instability" may increase even as the number of weapons systems declines.

Moreover, a reduction in super-Power strategic arsenals will make the growing nuclear inventories of France, the United Kingdom and China of increasing strategic significance. The strategic arms control process, insofar as it is successful, is bound, therefore, to become of increasing multilateral concern. On the conventional front the proliferation of chemically armed ballistic and cruise missiles poses new problems for multilateral conflict reduction and arms control.

Offence-dominant force structures and associated war-winning strategies are destabilising because they provide incentives for arms races, for pre-emption in crises, and for escalation once the threshold of armed conflict has been crossed.

To argue that if wars are unavoidable they should be fought offensively in no sense implies any necessary aggressive intent, but the force structure/strategies necessary for aggression, on the one hand, and for offensive defence, on the other, are very similar, if not identical. This means that no matter how benign the intentions of a State which adopts an offensive defence posture may be, that posture will tend to

be seen as evidence of possibly aggressive intent by prudent "worst case" planners on the other side. There is so much evidence to support this proposition—not least in the experience of the North Atlantic Treaty Organisation (NATO) of some 40 years—that it can hardly be denied.

Offensive Defence and the Super-Powers

Offensive strategies are based on the principle that "offence is the best form of defence", on the principle of "taking the war to the enemy" in order to destroy his aggressive potential (i.e. offensive weapons systems and the command and control systems, logistics networks, etc., which support them). Only offensive strategies, it is argued, can actually win wars, while the ability to threaten an enemy with the prospect of military defeat is the most powerful and credible deterrent to aggression.

Both Super-Powers employ offensive strategies—the Soviet Union on land, the United States at sea. Soviet conventional military doctrine and associated force posture on the Central Front in Europe provide perhaps the most classic example of offensive defence strategy. The USSR suffered millions of casualties fighting a defence-in-depth defensive attrition campaign against the Nazis in World War II. This was not an experience that the Soviet Union was anxious to repeat, and post-war Soviet strategic thought emphasised rapid offensive attacks designed to destroy NATO forces on Western European soil.

There can be no doubt that a major cause of NATO concern about Soviet objectives has stemmed from the Warsaw Treaty Organisation's (WTO) highly offensive force posture. Moscow might insist that its forces would be used only in response to aggression; Washington, Bonn and London simply noted that such forces were also worryingly suitable for aggression.

By 1986, however, there were signs of what seemed to be a remarkable change in attitude on the WTO side. Meeting that year in Budapest, the Warsaw Treaty States proposed the idea of a mutual reduction in offensive capabilities.

In September 1987, Mikhail Gorbachev wrote in *Pravda* of the need to create a force structure that "suffices for the prevention of possible aggression, but is insufficient for attack."

In September 1988, Soviet Defence Minister Yazov argued in support of mutual force reductions which would leave:

"... both sides with such numbers of armed forces and weapons as would be sufficient for defense but insufficient for offensive purposes.... At any stage we are prepared for mutual reductions in offensive arms— above all, tactical nuclear weapons, strike tactical aircraft, and tanks."

Moscow's subsequent willingness to accept asymmetric cuts which would reduce Warsaw Treaty offensive armour capabilities far more than those of NATO supports the thesis that the Soviet leadership is serious about restructuring the nation's military capabilities in a more defensive direction.

There is no doubt, however, that sectors of the Soviet military oppose both the massive unilateral defence cuts which Gorbachev has already agreed to and any shift away from the USSR's traditionally offensive force posture. Some elements in the military, while paying lip service to the idea of a defensive strategy, seek to maintain powerful forces for counter-offensives. Such forces are normally identical to those needed for offensive operations.

It is somewhat ironic that at a time when the USSR is stressing the need to restructure forces in a defence-dominant direction, there should be a strong push within NATO for a greater emphasis on offensive operations.

The offensive shift in NATO strategy does not imply any hostile intent *vis-a-vis* the USSR. It is rather a response to concerns felt by many NATO planners that the removal of intermediate-range nuclear forces (INF) from Europe will tend to "decouple" Europe from the United States and in so doing undermine the credibility of the United States nuclear guarantee to Europe. Enhancing NATO's conventional forces is seen as one way of overcoming this problem, and one means to this end has been to emphasize "deep attack" missions with forces which employ "emerging technologies" (ET).

NATO has always had both the capability and intention to attack static targets (e.g., airfields and railway marshalling yards) deep in Warsaw Treaty territory. ET capabilities will enhance that capability and, in theory, make it possible to destroy mobile forces as well.

Critics of "deep attack" disagree strongly with the shift away from NATO's traditionally more defensive strategic stance and have argued on a number of grounds against the "deep attack" philosophy, which is embodied in the NATO planning concept known as "follow-on-forces attack" (FOFA) and in the United States Army's "air-land battle" doctrine.

From the perspective of this paper, the major source of concern with "deep attack" systems is that even though they lack the capability to seize and hold territory, they are nevertheless destabilising. Long-range NATO "deep attack" systems will correctly be perceived by the Soviet Union as posing a serious threat to its vital and military assets, and the destruction of those systems will become a vital Soviet wartime objective—irrespective of the cause of the war.

Since the most effective way to stop certain "deep attack" systems—particularly missiles—is to destroy them on the ground, the very existence of United States "deep attack" systems provides the Soviet Union with an incentive to pre-empt in a crisis. If the Soviet Union targets its "deep attack" systems against those of the United States, this will create a United States incentive to pre-empt and a Soviet incentive to pre-empt a possible United States pre-emption, and so forth.

In the context of an intense crisis, the interactive "ratcheting up" of alert statuses may, as many analysts have argued, increase the chances that defensive preparations will be seen as offensively intended. A situation in which an opponent's intentions are perceived as being aggressive, while at the same time clear incentives exist for pre-emption, provides an almost textbook description of the conditions for crisis instability.

Given that both the Soviet Union and NATO are publicly committed to reducing the capabilities for both surprise attack and large-scale offensive operations, prospects for successful negotiations towards achieving these goals at the new conventional armed forces (CFE) talks in Vienna might appear to be good—indeed heartening progress has already been made. There remain real difficulties, however.

NATO is still suspicious about Moscow's apparent embrace of the concept of defensive defence—noting the continued Soviet military adherence to the idea of counter-offensives. The Warsaw Treaty States, on the other hand, find NATO's reluctance to negotiate reductions in some offensive systems (particularly the missiles and strike aircraft which would be used in "deep attack" missions) unacceptable.

Strategic Stability and the United States Maritime Strategy

The fact that, after four decades of confrontation across the Central Front in Europe, the USSR has acceded to NATO demands that it reduce the offensive thrust of its military posture and make unilateral cuts in its forces is quite remarkable. It stands in stark contrast to the

decade and a half of completely fruitless Mutual and Balanced Force Reduction Talks (MBFR). If the cuts proceed as suggested, the Soviet Union itself will have undercut its own long-held strategy for winning a war in Europe.

But often forgotten in the obsessive Western media focus on Europe is the fact that Moscow has concerns about offensive Western strategy—particularly United States naval strategy. While Moscow has responded positively to NATO's concerns about the offensive nature of Soviet land strategy in Europe, the United States has been resistant to Soviet demands that naval arms control measures be implemented to constrain the equally offensive nature of the United States Navy's global Maritime Strategy. NATO has refused even to discuss naval issues in the CFE talks or in any other forum.

The Maritime Strategy stresses forward offensive operations designed to win the "battle of the first salvo" and "go for the jugular" of the USSR. As former Defence Secretary Caspar Weinberger argued in 1986, the United States is seeking to develop forces that, once hostilities have commenced, will be able to "strike first, from extended ranges."

The fact that the Maritime Strategy is offensive in orientation does not, of course, mean that the United States harbours aggressive intentions towards the USSR—any more than does the offensive thrust of Soviet land strategy on the Central Front mean that the Soviet Union harbours aggressive intentions towards NATO Europe. However, the United States Navy's strategic posture, like that of the USSR on the Central Front in Europe, does have serious implications for crisis stability.

Two aspects of the Maritime Strategy are of particular concern here. First, there is the claimed United States intent to attack Soviet missile-firing submarines (the most survivable forces in the Soviet strategic "triad") at the outset of a conventional war. This tactic is intended to weaken the Soviet nuclear-powered ballistic missile submarine (SSBN) force and in so doing to change the nuclear correlation of forces in favour of the United States. With Soviet offensive nuclear capability thus weakened, the nuclear option for Moscow will, it is argued, become "less attractive." This in turn will enhance the prospects for war termination on terms favourable to the United States. Thus it will reduce the risk that the conventional conflict will cross the nuclear threshold by minimising Soviet incentives for escalation. The logic underpinning such assumptions is, however, highly questionable.

It is difficult to see how the Soviet Union could possibly permit the attrition of its SSBNs to continue without retaliating. Over a considerable period of time a successful United States anti-SSBN campaign could certainly affect the strategic balance—even though the initial impact would be small.

Moreover, the United States Navy's anti-SSBN tactic will be of increasing concern to Soviet military planners as greater and greater percentages of Soviet land-based forces become vulnerable to new United States strategic systems. These include the B-1 bomber (and possibly the B-2), the MX missile (and possibly the Midgetman) and, above all the Trident D-5 submarine-launched ballistic missile (SLBM)—the first SLBM to have “hard-target” capability comparable to accurate land-based systems like the MX.

The greater the vulnerability of Soviet offensive strategic systems, the greater the incentives for the United States to attempt damage-limiting pre-emptive strikes against them. Nuclear pre-emption has a certain macabre logic in a crisis situation where one side believes, or believes that its opponent believes, that war is anyway inevitable.

When war appears to be inevitable the rationale for nuclear pre-emption and escalation is to limit damage to oneself by destroying as many as possible of the enemy's nuclear-weapons systems before they can be used.

It is impossible to say how Moscow would respond to attacks on its SSBNs. The United States Navy expresses confidence that the Soviet Union would not cross the nuclear threshold, but such confidence is more an artifact of faith than anything else. It is not a faith shared by many of the Navy's critics.

The anti-SSBN tactic also violates one of the central tenets of United States thinking on arms control for the past two decades. Successive United States Administrations have sought to persuade the Soviet Union to shift the emphasis in its strategic forces from the highly destabilising heavy intercontinental ballistic missiles (ICBMs) with multiple independently targetable re-entry vehicles (MIRVs) to SLBMs on the grounds that the latter are more stabilising. But this policy is made to look ridiculous if the United States Navy then targets the very missile submarines which are supposed to be stabilising because they are the least vulnerable element in the Soviet strategic “triad” of ICBMs, bombers and submarines.

A second destabilising aspect of the Maritime Strategy is the tactic of so-called horizontal escalation. The rationale underpinning horizontal

escalation will be familiar to any chess player. If United States forces are involved in a losing battle with the Soviet Union on the Central Front in Europe, the Navy can bring countervailing pressure to bear *via* horizontal escalation. This means in essence that the United States would open a second front by escalating the conflict horizontally—i.e., attacking the Soviet Union at a location where it is at a disadvantage. The alleged tactical benefits of horizontal escalation have been subjected to severe criticism in the United States, but the tactical shortcomings are of less concern here than questions of strategic stability and escalation control.

Horizontal escalation makes a virtue of transforming regional conflicts into global wars. It seeks deliberately to widen the super-Power confrontation, despite the fact that the stated objective of United States policy is to confine the scope and intensity of conflicts. In proliferating the theatres of war it compounds problems of conflict termination and, above all, it threatens further escalation. It makes United States allies like Japan, which exist on the Soviet periphery, hostage to instabilities on the other side of the globe. It will, moreover, be militarily redundant if asymmetric force reductions by Moscow on the Central Front make the prospects of the Soviet Union's achieving conventional victory nonexistent.

In both the anti-SSBN tactic and horizontal escalation, we see how offensive tactics designed to enhance deterrence and prevail if deterrence fails may undermine crisis stability and escalation control.

Soviet concerns about the offensive thrust of the Maritime Strategy are reflected in the considerable number of naval arms control proposals advanced by Moscow over the past three years. These proposals have been either ignored by the United States or rejected. The United States complains correctly that most of the Soviet proposals are one-sided. If implemented, they would constrain United States naval activities more than those of the USSR—in other words, the United States would be at a relative military disadvantage if it accepted Moscow's proposals. Yet, the Soviet demand on the United States—namely that Washington reduce the threat of superior and offensively deployed maritime forces which Moscow finds so worrying—seems little different from the United States demand that the USSR reduce the threat of its numerically superior and offensively deployed land forces along the Central Front in Europe.

The United States Navy also argues that it is legitimate for the United States to have maritime superiority based on a forward offensive strategy since the United States is a maritime Power with offshore

allies to protect. But even if the logic of this claim (which ignores the fact that the USSR is also a considerable maritime Power) is accepted, it is not clear why it would not be equally legitimate for the USSR, a continental Power, to maintain its land superiority on the Central Front in Europe.

New Conventional Weapons and the Risk of War

Throughout history the emergence of new weapons systems has wrought major or minor revolutions in strategy. Two such developments may be taking place today, one deriving from the dramatic improvement in ballistic and cruise missile capabilities and the global proliferation of these systems, the other created by the threat of a combination of chemical (and possibly biological) weapon proliferation.

During the past two or three years, prompted in part by events during the Iran/Iraq war, Iraq used both chemical weapons and ballistic missiles—but not in combination. Had Iraqi chemical weapons been mounted on the ballistic missiles used against Iranian cities during the war, the death toll would have been comparable to, or greater than, that at Hiroshima and Nagasaki.

There is clearly a real possibility that, at some time in the future, the proliferation of chemical weapons capabilities plus the growing availability of off-the-shelf ballistic missiles may lead to the two technologies' being combined in war—with devastating consequences for the civilian populations of the major cities which would be the most likely targets.

The spread of ballistic missile technologies is already well under way. According to a recent report by the United States Congressional Research Service:

"The number of countries that have purchased missiles is growing; the number of countries that produce missiles is growing; and their missiles have increasingly longer ranges, carry heavier warheads, and are generally improving in accuracy."

The USSR has sold large numbers of short-range ballistic missiles to third world client States—mostly in the Middle East. The United States has exported missiles in the past to Israel and the Republic of Korea, and, in 1988, China sold to Saudi Arabia CSS-2 missiles which (depending on the type of warhead used) have a range of up to 2,300 kilometres.

Ballistic missiles can be—and are—produced indigenously as well as imported, and international co-operation is also a characteristic of

the missile development programmes of a number of third world countries.

Ballistic missiles are not the only cause for concern; cruise missiles fired from ships or submarines provide another possible chemical weapons launch vehicle. Most sea-launched cruise missiles (SLCMs) deployed world-wide today are anti-shipping missiles, e.g.. Harpoon and Exocet. For these (or larger) SLCMs to be used effectively for land-attack missions, new guidance systems would be needed. Such guidance systems may already be available.

Equivalents to the United States terrain-matching radar (TERCOM) system used on the Tomahawk land-attack missile are unlikely to be emulated by third world States for a long time. Accurate targeting for such systems may soon become possible using the US NAVSTAR satellite navigation system. Navigational positioning within around 30 metres is accurate enough for delivering chemical weapons munitions. Cruise missiles, which fly at sub-sonic speeds, are theoretically capable of detection; however, the probability of a successful defence against close-in, submarine-launched SLCM attacks would be extremely low.

Meeting the Chemical Weapons/Ballistic Missile Threat

What can be done to combat the looming chemical weapons/missile threat? Having exported short-range ballistic missiles in the past, the United States now believes that global security will be enhanced by checking ballistic missile proliferation. The Soviet Union clearly shares many of the United States concerns.

One approach to the problem of ballistic missile proliferation is arms control and a hesitant start has already been made down this road. In 1987, seven industrialised States, including the United States, agreed to monitor and control the export of nuclear-capable missiles and vital components for those missiles. The Soviet Union has not yet joined the club, but may well be persuaded to do so.

The 1987 agreement is known as the Missile Technology Control Regime (MTCR)—a multilateral agreement with too few members. MTCR suffers from a number of formidable problems, not least of which is that it seems to many third world countries like yet another re-run of an old, familiar theme: advanced industrialised countries believe that ballistic missiles—like nuclear weapons and chemical weapons—serve the cause of deterrence and stability when in *their* hands. The same weapons in third world hands are seen as undesirable

and destabilising. Most third world nations find such attitudes patronising, hypocritical and unacceptable.

However, it is unlikely that even an improved export control regime would provide more than a partial solution to the missile proliferation problem. So, given that there are no effective defences against ballistic missile attacks, what are the other potential options?

First, there is what might be called "countervailing deterrence". Countries concerned about the threat of ballistic missile/chemical weapons attack could acquire similar capabilities with which to threaten retaliation in kind if attacked. Such a response is, however, likely to lead to a classic action-reaction arms race, and arms races tend to increase pre-existing tensions and heighten suspicion and hostility.

The threat which long-range chemical-weapon missiles pose and the impossibility of defending against them once they are launched would also provide threatened States with an incentive in a crisis to try a disarming first strike against their opponents' missiles and/or chemical weapons stocks. Once again we see that offensive weapons systems which may be intended solely to enhance deterrence may help cause the very wars they are intended to prevent.

Although the arms control option is worth pursuing, what is also needed is a campaign designed to make any resort to chemical weapons politically unacceptable. The international community must make the use of chemical weapons—especially those mounted on long-range delivery systems which are likely to be directed against civilians—as morally indefensible and unthinkable as resort to nuclear weapons has become. The Super-Powers will have absolutely no moral or political authority in this respect as long as they continue to maintain huge chemical weapons stocks.

Conclusion

The central theme of this study has been that long-range offensive weapons systems and strategies designed to enhance deterrence may increase suspicion and hostility, provide incentives for arms races, for pre-emption in crises, and for escalation once the threshold of violence has been crossed. In other words, they may increase the risks of inadvertent war.

Policies designed to reduce the risks of unintended war are quite different from those intended to deter aggression via offence-dominant strategies and force structures. They tend to focus on techniques of

crisis avoidance, crisis control, tension-reduction, confidence-building and arms control. In all the areas discussed in this paper, it is clear that the arms control process will in the future be increasingly multilateral.

Policies which aim to reduce the risk of inadvertent use may also increasingly focus on the need to create defensively oriented strategies and force structures which provide a strong defence and an adequate deterrent, while eschewing those offensive capabilities. There is now a considerable literature on "non-provocative defence" concepts and an active debate on their strategic value in both Europe and the Soviet Union. It is difficult to see what objections could be raised to the mutual adoption of defensive strategies; the common security benefits could be enormous.

THE IMPACT OF EAST-WEST CONFIDENCE-BUILDING MEASURES ON GLOBAL SECURITY: A VIEW FROM THE SOUTH

On different occasions, concern has been expressed regarding disturbing trends in the field of arms control and disarmament. In particular, a substantial number of countries fear that the major nuclear Powers have shifted their negotiating priorities away from the 1978 Final Document of the Tenth Special Session of the General Assembly. Focusing now on questions mainly related to conventional forces and weapons and to measures of non-proliferation, they seem reluctant to agree on curtailing their nuclear stocks.

Other countries, which are not directly responsible for the accumulation of military arsenals and whose problems are of an entirely different nature, tend occasionally, for the reasons mentioned above, to remain on the sidelines of debates regarding confidence-building measures. The following remarks are an attempt to look at these matters from the perspective of the challenges involved in the restructuring of the international order.

The easing of East-West tensions offers political and diplomatic opportunities for all members of the international community. At this juncture, it is particularly important to promote a comprehensive understanding of contemporary global trends. Attention should be given to specific aspects of the international order that may, in the future, constrain the mobility of those countries at the lower levels of the present system of power.

There are important trends to take into account as we move into the 2000s. One that comes to mind immediately is the belief that interdependence will become the key concept of inter-State relations. The prevailing view is that the new order—possibly freed from contradictory political elements and taking as its premise a newly found realism—will provide the foundations for greater international security and stability.

It is true that interdependence means that East and West may find common ground in defining acceptable rules of cohabitation under an umbrella of bilateral, regional and multilateral agreements. It should not, however, be taken for granted that the probability of political fragmentation on the international level will cease to exist in the future. Certainly, the emphasis seems likely to be deflected from the critical aspects of the nuclear and military threats, mainly in the European theatre. For the third world countries, nevertheless, the consequences of this process are not entirely clear.

The prevention of war has a different meaning and less obvious implications for all those countries which are peripheral to the central negotiations on arms control and crisis management. It is not that they are less interested in disarmament measures as a whole, but they seek a much broader understanding of international peace and security questions.

The ongoing negotiations between the United States and the Soviet Union—and among member States of the two opposing military alliances—entail a number of challenges to all other countries. Particularly for the developing world, it is essential to ensure that the prospects of East-West entente are not restricted to military and security arrangements. The evolving agreements among major Powers must not lead to the obstruction of the already jammed channels of international dialogue and co-operation.

It is most disquieting, for instance, that enemy images are still commonly applied to portray endemic problems of the developing countries. There is indeed an obvious imbalance when it comes to debating issues like drugs and environmental protection, among others. This bias does not recognize the complexity of tasks facing the poorer countries. From their point of view, on the contrary, confidence-building measures cannot exist in isolation, apart from economic development and social advancement.

It would be insufficient, on the one hand, to accommodate the military concerns of the major Powers and, on the other, to avoid

extending the related benefits of mitigated tensions to other spheres of international co-existence. The potentially explosive crisis in the third world, associated with ever-increasing social backwardness, ought to be an integral element of any peace strategy. It is therefore of paramount importance to prevent the re-emergence of types of confrontation or attrition caused by the present state of affairs in sensitive areas like trade protectionism, external debt and extreme poverty in the least developed countries.

Besides the dynamic elements of neo-detente, another interesting trait of the contemporary world is the setting of new economic frontiers that do not entirely coincide with the prevailing geostrategic reality. Expectations regarding the European Common Market and the Asian-Pacific region reflect the fact that a revolutionary reshaping of the international economic order is on its way. This process will, hopefully, run parallel to unprecedented achievements in the field of disarmament, but it will not necessarily be devoid of contradictions and conflicting aspects.

Countries at the centre of the international system, both politically and economically, will stress that interdependence is the guiding principle of the new order. The main issue at hand, however, is to promote a substantial remodelling of international relations on the basis of a comprehensive diagnosis of the present problems affecting humanity.

It is unavoidable that national effort and the related questions of national sovereignty will continue to play a predominant role in the identification of global security interests. This is the only realistic option for most of our countries. It is an approach that combines positive expectations and adequate diplomatic action.

This leads to a final observation. The debate on confidence-building measures should not be guided solely by the criteria of the balance of military power. It has to go beyond the question of shaping stability and preserving the *status quo*. It has to incorporate other interlocking qualitative aspects of inter-State relations and the perceptions and policies of all countries, great and small. In the final analysis, the prevention of war on a global scale would not be really meaningful if the major Powers remained either silent or indifferent to the less fortunate countries' permanent isolation from the streams of international wealth and prosperity. The United Nations has a unique role to play in promoting these objectives.

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offered under the aegis of Asian Chapter
IAEWP's ONLINE PEACE EDUCATION,
RECONSTRUCTION, ACCORD, NON-VIOLENCE
AND DISARMAMENT INITIATIVE (OPERANDI)**

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**Online Peace Education, Reconstruction, Accord,
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