

Online Study Materials on
**ARMS RACE, TRADE AND
MILITARY EXPENDITURE**

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**SECURITY, ECONOMIC AND POLITICAL
IMPLICATIONS OF ARMS RACE**

Introduction

1. The threat of ultimate self-destruction as a result of nuclear war is the greatest peril facing the world. For many years, nuclear arsenals have been sufficient to destroy the entire world, but the accumulation and technological refinement of nuclear weapons continues, enhancing the perils and providing increasingly ample means for the final obliteration of mankind.

2. Effective security cannot be achieved today by further armament. The world has long since reached the point where security can only be sought in disarmament and in the expansion of international co-operation among all countries in all fields, the establishment, on the basis of mutual benefit, of ties which will permit the elimination of present sources of tension and conflict and the suppression of the relevance of force in international relations. By constantly increasing the military perils and by impeding the full development of that co-operation, the continuation of the arms race enhances political differences, perpetuates confrontations and erodes security.

3. The cost of the arms race is enormous. Tens of millions are enrolled in the armed forces the world over and tens of millions more work in military-related jobs. World military expenditures over the last five years have exceeded \$1.8 thousand billion in today's prices. At the same time, vast social problems remain to be tackled in practically all countries. Public services, health, education, housing, protection of the environment, and social and economic progress generally, all need the resources which the arms race consumes.

4. It is the military forces of the largest powers and the immense destructiveness of the weapons with which they are equipped, which

casts the greatest shadow over the world. But, the arms build-up in other parts of the world also involves very great dangers, Third countries or the major powers themselves could be drawn into conflicts in these areas and even when they are not, the experience of the past decades has shown the enormous devastation which modern weapons, even so-called "conventional" weapons, can cause.

5. These are some of the main features stressed in the first report on the *Economic and Social Consequences of the Arms Race and of Military Expenditures*, submitted to the General Assembly in 1971.¹ They retain their entire validity today. Indeed, arsenals have been growing in size and sophistication and new types of weapons of even greater destructive power have been developed or have become operational in the meantime. The threat inherent in vast accumulations of weapons, and of nuclear weapons in particular, continues to grow. The cost of the arms race for the world as a whole and for the vast majority of countries has continued its rise, while the problems of development and the urgency of social needs are as acute as ever. The threat of war, the risk of final obliteration and the immense human and material costs of the arms race are still the reasons which make disarmament imperative.

6. But, there are a number of features which have changed in the intervening period, some of them radically new, some of them merely extrapolations of trends which were already beginning to make themselves felt in the 1960s and which add to the urgency of the need for disarmament. Predictably, as the major powers have made no progress in actual reductions of their arsenals but have continued to expand and refine them, the arms race has proven increasingly difficult to confine geographically. New powers are emerging with a regional military preeminence and the number of countries on all continents which are being drawn into the over-all arms build-up, acquiring ever more sophisticated weaponry, is increasing.

7. Also on the cost side of the arms race, the situation has been changing for the worse. In the 1970s, many countries experienced deep recession and severe inflation. Most others were affected indirectly by its impact on international trade and by the disruption of the international system of payments. As a result, government programmes in the social and economic fields have in many cases had to be revised downwards. At the same time, though for partly different reasons, problems of environment preservation and resource conservation have gained a new prominence and have been the cause of growing concern. Against this background of a darkened economic outlook and a greater awareness

of the scarcity of resources and the fragility of the physical environment, the continued mindless and uninhibited wastage of the arms race becomes ever more incongruous and unacceptable.

8. In the field of international relations as well, profound changes have taken place. New countries and groups of countries have risen to economic and political prominence. Old patterns of alignment are in many cases felt as a fetter on the social development of countries and a hindrance to the development of international co-operation on the basis of sovereignty, equal participation of all States and equal rights and duties. These trends have found their most systematic and explicit expression in decisions to move towards the establishment of a new international economic order.

9. The decade of 1970s have been proclaimed as the Disarmament Decade. Two-thirds through it, it is already possible to begin to take stock. This period has been characterised by a consolidation of detente among the main protagonists in the arms race, by the adoption of a number of partial agreements, bilateral and multilateral, on the limitation of armaments. The Helsinki Conference on Security and Co-operation in Europe was of particular importance for the consolidation of detente. But, these results have been far from sufficient to turn or even to stem the tide of the arms race. It is already apparent that the Disarmament Decade is not likely to produce the results hoped for, and that in planning for the next the reasons for that failure will have to be carefully considered. For there can be no relaxation of effort. Genuine and substantial disarmament, particularly nuclear disarmament and particularly of those countries whose military arsenals and military budgets are the most massive, remains a task of the greatest urgency. All countries and Governments share responsibility for taking effective action to halt and reverse the arms race so that genuine security can be achieved and one of the main hindrances to social and economic progress can be removed.

10. In bringing the 1971 report up to date, we have on the whole retained the original structure. Chapter I is a general outline of the current arms race. The main emphasis is on demonstrating how deeply entrenched the drive for constant technological innovation in armaments has become, and to explore the consequences of this central feature of the arms race. The drive for qualitative improvement in armaments has led to a number of technical developments which could have far-reaching military-strategic implications. It is also one of the principal forces behind the rising trend of horizontal proliferation: the

dissemination of weapons to an increasing number of States. In several respects the forces which drive the arms race along strengthen and diversify as the urge for constant improvements in military technology becomes predominant. All of this has direct implications in terms of approaches to disarmament.

11. Chapter II is an assessment of the gigantic and endlessly rising costs of the arms race in terms of resources: material, human and financial. The true magnitude of this wastage and its intolerable character become apparent when these costs are compared with the unmet and urgent needs in economic development, nutrition, health, education, environmental protection, development of new sources of energy and raw materials and many other fields.

12. But, the harmful social and economic effects of the arms race are not confined to the wastage of resources it entails, and in chapters III and IV its wider social, economic, political and security implications are examined. For convenience, they have been subdivided into domestic and international implications, even though that subdivision is in some respects arbitrary. Chapter III therefore deals with the implications of sustaining a large military sector for the general evolution of societies. Some of the major themes are the negative impact on economic growth and development, the role large arms budgets may possibly have played in enhancing inflationary tendencies and economic imbalances in some countries, and finally, the socio-political implications in the widest sense of the emergence of sectors of society which may have a vested interest in the perpetuation of the arms race.

13. Chapter IV deals with the international implications of the arms race. By far, the most important is of course the threat of war which it implies and which it enhances, including the risk of ultimate world-wide destruction. But, it is hardly an exaggeration to say that in addition to this the arms race in which the world is engaged affects almost all other aspects of international relations through the pattern of alignments and confrontations it establishes and by affecting the flows of international trade aid, the transfer of technology, and other exchanges. In particular there is an obvious incompatibility between the continuation of the arms race and the reorganisation of relation among States on the basis of equality and co-operation as implied in programmes for the establishment of a new international economic order.

REFERENCE

1. A/8469/Rev. 1 (United Nations publication, Sales No. E.72.IX.16) (hereafter referred to as the 1971 report).

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ECONOMIC AND SOCIAL IMPLICATIONS OF THE ARMS RACE

The arms race represents a waste of resources, a diversion of the economy away from its humanitarian purposes, a hindrance to national development efforts and a threat to democratic processes. But, its most important feature is that in effect it undermines national, regional and international security. It involves the constant risk of war engaging the largest Powers, including nuclear war, and it is accompanied by an endless series of wars at lower levels. It raises an ever greater barrier against the development of an atmosphere in which the role of force in international relations may be downgraded. In addition, it impedes relations between countries, affecting the volume and direction of exchanges, diminishing the role of co-operation among States and obstructing efforts towards establishing a new international economic order on a more equitable basis.

Recently, the world community has been taking important stands of principle on the restructuring of international economic relations, defining its objectives in the Declaration and Programme of Action on the Establishment of a New International Economic Order, contained in General Assembly resolutions 3201 (S-VI) and 3202 (S-VI) of 1 May 1974, and in the Charter of Economic Rights and Duties of States, contained in Assembly resolution 3281 (XXIX) of 12 December 1974, as well as in Assembly resolution 3362 (S-VII) of 16 December 1975. Numerous other United Nations documents and documents by other organisations of the United Nations system have since been added and are being elaborated as in the case of the United Nations Conference on the Law of the Sea. Together these express a growing awareness of the profound inadequacy of the present international economic system and constitute steps towards outlining a new one.

There are considerable differences in approach to the question of a new economic world order. Some States have in mind a substantially new order, while others envisage mostly a development of the existing one. Nevertheless, there is on all sides a growing awareness of the fact that the polarisation of wealth and poverty in the world can no longer be tolerated. The perpetuation and indeed the exacerbation of enormous disparities in levels of well-being is not only morally unacceptable but also exceedingly dangerous from the standpoint of future relations between States and of world peace.

Progress towards a new international division of labour, the setting up of mechanisms of co-operation to ensure greater stability and better prospects for the social and economic progress of all countries, particularly the developing ones, presupposes patient negotiations towards changes of a fundamental nature, based on unanimously acceptable solutions. In this process the continuation of the arms race, maintaining and deepening existing divisions, and perhaps leading to the temptation to impose solutions or maintain the *status quo* by force, would constitute a serious obstacle in the way of progress.

The international consequences of the arms race may be grouped under three headings, even though in practice these effects are in many ways interrelated. First and foremost, there is the strictly military aspect: on the one hand, a long series of wars, some of them of extreme destructiveness, seldom caused in any strict sense by the arms race, but very often inflamed by it; on the other hand, an ever-present possibility of nuclear conflagration. The new feature here is the growing awareness that the approaches adopted in the 1960s to deal with this threat will have to be set in a broader context and will have to be related to a wider programme of disarmament, one that ultimately aims at general and complete disarmament, if they are to restrain and reverse the arms race effectively. Short of a new departure it is to be feared that the Disarmament Decade will not produce satisfactory results.

Second, there are the economic effects (and, by implication, social effects) in the widest sense: the effects of the arms race and military expenditures on trade, on aid, on technological and scientific cooperation and on other kinds of exchange between countries. By diverting vast resources away from production and growth, and by contributing to inflation and the economic crisis which have affected many countries, the arms race directly and indirectly impedes the full development of international exchanges. In addition, the flow of trade and aid is distorted, in some cases very markedly, by interference from political and strategic

considerations, resulting in the misallocation of resources on a global scale. The arms race, thereby, contributes to maintaining and widening the gap between and within developed and developing countries and impedes co-operation between States, socio-economic progress generally and the promotion of a new international economic order.

Third, there is the impact of the arms race on international political conditions. In an environment characterised by high military preparedness on all sides, conflicts, even minor ones, tend to be exacerbated and security considerations become salient in the policies of countries. This is an environment conducive to the creation of spheres of influence, in which local conflicts tend to become linked to regional or global confrontations and in which social and political developments are likely to be resisted if they seem to call existing alignments into question. The frictions arising from this rigidity at a time when the relative economic, political and military weight of countries changes more rapidly than ever are themselves possible sources of conflict.

Warfare has been a permanent feature of the period since the Second World War. Weapons have been in use on a significant scale virtually without interruption, more often than not in several places simultaneously. Casualties have been accumulating and total casualties since the Second World War has been many millions. To an overwhelming degree these conflicts have taken place outside the major industrialised regions of the world, although in many instances some major Powers have been directly involved and, virtually without exception, the means of warfare have been provided by these Powers. One source, using defining criteria which are open to debate, arrived at a total of 97 wars in the 24 years from 1945 to 1969.¹ A complete list would include a dozen or so that have been major wars by any standard. Several of them owe their violence, their comprehensive character and their extreme destructiveness to the context of international polarisation and the ready availability of modern armaments which are features of the arms race. This is evidently the most important of all the costs of the arms race.

These wars, of great destructiveness as many of them have been, are nevertheless small and limited, both in space and in violence, compared with what would result from a nuclear war. The possibility of nuclear war remains the overriding danger of the arms race.

In chapter I it was shown that, from the point of view of technological developments now under way and of the strategic doctrines they may

carry with them, the nuclear arms race may be moving into a phase of greatly enhanced danger. On the other hand, certain limited progress has been achieved towards reducing the risk of outbreak of nuclear war. These are certain specific agreements in the context of the SALT talks, the generally improved understanding of each other's posture and intentions which these consultations have brought about, and the general process of detente. It would, of course, not be possible to weigh these two factors, technological, on the one hand, and political, on the other, against each other for they will make their effect felt in different contexts. Some forms of nuclear war may have become less likely (war by sheer accident in particular), other, notably forms of nuclear war that are supposed to remain controlled and limited, may have become a much greater risk. The fact remains that the overriding priority now, as it was five years ago and 15 years ago, is the elimination of the nuclear threat.

The only way to deal with that threat is, of course, to take genuine measures of nuclear disarmament, measures that restrict further development and ensure the prohibition and liquidation of all nuclear weapons. Nothing less can effectively diminish the risk, and nothing less, it seems, can stop it from growing. For in addition to the technical developments just noted there are other risks ahead. Short of nuclear disarmament it is unlikely that the further proliferation of nuclear weapons can be prevented in the longer run. If proliferation is to be halted, the nuclear weapon States will have to demonstrate clearly that for them, too, these weapons have no political or military utility commensurate with the, risks they involve.

Attempts to deal with the dangers of the arms race have not lacked, even though successes have been relatively modest so far. In the 1960s and continuing into the 1970s, these efforts were characterised by two main features: one was the priority given to partial measures aimed at preventing the arms race from moving into certain new directions; the other was the emphasis on detente, the assumption being that relieving suspicion and fear would not only diminish the risk of war, but would also remove one of the main factors fuelling the arms race.

The past decade and a half has produced a considerable number of agreements on arms limitation, including the Treaty Banning Nuclear Weapons Tests in the Atmosphere, in Outer Space and Under Water; the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies; the Treaty on the Non-Proliferation of Nuclear Weapons;

the Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Sea-Bed and the Ocean Floor and in the Subsoil Thereof; the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction; the Convention on the Prohibition of Military or any Other Hostile Use of Environmental Modification Techniques; the Treaty for the Prohibition of Nuclear Weapons in Latin America; the Soviet-American agreements on the limitation of strategic arms; and the Treaty between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Underground Nuclear Weapon Tests. It has also produced agreements between the United States and the USSR and between France and the USSR on the prevention of nuclear war. Although these treaties and conventions have contributed to some extent to a new climate of understanding, they have not proved equal to the task of slowing down the arms race or of significantly affecting the actual basis of armaments.

Partial and collateral measures can play a role in the cessation and subsequent reversal of the arms race, but it is becoming increasingly clear that for this to be the case they must be conceived as part of a broader programme, inscribed in a whole set of measures aimed at substantial disarmament in areas of weaponry of central military significance. If the partial measures are specifically designed just as measures to regulate an ongoing competition in armaments, the danger exists that they simply shift this competition in other directions.

During the mid-1960s, and the early 1970s, the partial measures achieved contributed to a climate of optimism, served to establish useful channels of communication, and demonstrated that agreements were possible, within limits at least. These measures, thus, undoubtedly contributed to promoting detente.

It is obvious that detente has had an important effect in relaxing the international climate, thereby diminishing the risk that conflicts in the periphery of the arms race or lesser conflicts involving the major Powers will escalate into nuclear war. By relieving the cold-war atmosphere between and within the main military alliances and helping to relax the rigid bipolarity of former years, detente also helped to promote exchanges of all kinds. Indeed, such exchanges are not only a result of detente, they are part of the process of detente itself, and continued relaxation of set patterns of relations between the main alliances, within them and within countries individually, as recognised

in the Helsinki Declaration on Security and Co-operation in Europe, are both aspects, of, and pre-conditions for, continuing detente. By building international relations on a sounder basis detente has improved the conditions for beneficial intercourse between States, for the development of economic ties, and for increased scientific, technological and cultural exchanges. These are major, even decisive achievements, of the last decade or so, which must be vigorously pursued and strengthened.

While the overriding importance of detente deserves constant emphasis, so do the failures of this period. The fact that political detente has not been accompanied by corresponding measures of disarmament and military disengagement is its central weakness and a major cause of concern. Detente is being continuously assailed and undermined by the momentum of technological developments in armaments. It is essential that detente should not be merely a process involving the main protagonists, a process limited geographically to certain areas and limited in substance by an intense rivalry in the military field. For evidently a continuous build-up in armaments is incompatible with serious attempts to eliminate the threat of war and to strengthen beyond a very limited point the confidence among States which must be the foundation of genuine detente. If the arms race is not reversed, detente remains without a real basis, always in danger of sliding back into tension, suspicion, isolation and confrontation.

After more than a decade of attempts to curb the arms race it can be seen that these efforts were inadequate. In every important respect the arms race is continuing apace, while much talent and energy has been spent on what is now seen as issues of more marginal importance.

Genuine and widespread public concern about the dangers of the arms race may be one of the most important ways in which a new momentum could be imparted to efforts towards disarmament. On several occasions it has been seen how the public, when adequately informed, was able to exert a moderating influence on developments in the field of armaments. On questions of armament and disarmament a which engage the very survival of humanity the need for an active and informed opinion able to oppose all incitement to war and the need to stimulate and channel public concern in constructive directions is particularly great. The United Nations and other organisations have made important efforts to disseminate information on the arms race, to develop an international awareness of its dangers, and of the dangers of the nuclear arms race in particular, and to promote an understanding,

free from comforting illusions, of the action which has been and could be taken. These efforts, requiring as they do the open and committed co operation of the Member States, need to be continued and strengthened.

The second major consequence of the arms race for the international system is its effect on exchange generally, and economic transactions in particular. As already noted, war, major foreign military commitments and the drain on the economy inherent in large military expenditures has been one factor contributing to the disruption of the international monetary system and to sustained inflation in many countries, rendering the present recession more pervasive and more intractable.

The 1971 report already pointed to a number of these effects, stressing in particular how international trade was being inhibited by the continuation of the arms race. These problems have lost none of their importance. Evidently, there are other causes as well which are a hindrance to free exchanges, including discrimination, import restrictions and protectionism and, in some cases, more technical and practical difficulties. None the less, the ongoing arms race is one important factor restricting flows and distorting them. One particularly negative aspect of the arms race is the limitation of trade in so-called strategic commodities which may be anything from raw materials to advanced technology, in some cases goods of key importance for the civilian economy. Though they have been gradually slackened, important restrictions still exist and it is evident that some of them (relating to advanced electronics, propulsion systems and nuclear technology, for example) can perhaps be relaxed somewhat but are not likely to disappear altogether while armaments retain the role they have today.

Another aspect of this question is that strategic embargoes may also be a means of forcing opponents to incur large expenditures. They may thus constitute a kind of economic warfare. Protectionist policies have in some cases been adopted to preserve a measure of self-sufficiency in agricultural production and in some sectors of manufacturing. Though other motives for protectionism are undoubtedly of greater importance, this adds to the deleterious effect of import restrictions on the exports of developing countries. In some cases, important although few in number, embargoes have been carried so far that they almost amounted to attempts at strangulation. When this has happened to countries heavily dependent on foreign trade or on technical assistance it has meant a serious impediment to development.

The harmonious development of the increasing international interdependence, in scope and in intensity requires the abolition of barriers and the universalisation of exchanges and of participation in the instruments and institutions for international exchange. The arms race constitutes an obstacle to this process, creating divisions among countries and groups of countries, and perpetuating existing barriers. As long as the arms race continues it is hard to imagine that a new international division of labour and new international commercial, monetary and financial order could be instituted in which all countries, without discrimination on military-strategic grounds, would have equal access to credit markets, raw materials and other means of economic development and co-operation.

Besides changes in the conditions of trade, one point most persistently stressed in documents and analyses pertaining to the new international economic order is the need for increasing development assistance in all its forms, not only in the form of official grants and loans on concessional terms, but also in the form of development-promoting measures with a concessionary component in such fields as trade in food and industrial goods, transfer of technology and many more. Measures towards disarmament would obviously improve the possibility for assistance in every respect. Indeed, for aid in the narrow sense, world-wide military expenditure is described by the Committee for Development Planning as "the single most massive obstacle" to development support.²

The arms race has not only diminished the priority given to aid in the policies of donor countries, it has also distorted the flow of bilateral assistance, in some cases to a marked degree. For some donor countries there is little apparent relation between the urgency of the development needs of recipient countries, on the one hand, and the flow of bilateral aid to them, on the other.³ Instead, the relationship between aid provided and political considerations is in many cases very pronounced. There have been cases when the provision of aid served an ulterior purpose: to acquire influence or deny it to others, or to help obtain base facilities or other military-strategic advantages. This greatly diminishes the usefulness of the aid provided, not least because the poorest countries, the land-locked and otherwise disfavoured, are rarely those whose politico-strategic importance is greatest. In addition, when aid flows are distorted in this way by political considerations related to the overall arms race it may in some cases encourage recipient countries to get involved in the confrontations of outside Powers, thus adding more fuel to the arms race.

Present levels of development assistance are clearly inadequate measured against the needs, and they even fall far short of the targets, not overly ambitious, set in the International Development Strategy for the Second Development Decade. During the first half of the decade, from 1971 to 1975, official development assistance from the developed market economies amounted to 0.32 per cent of their combined gross national product, reaching not even half of the strategy target 0.7 per cent.⁴ Transfer to development assistance of funds equivalent to a mere 5 per cent of their current military expenditures would have been sufficient to meet the target fully.

Disarmament and development are by far the most urgent problems facing the world. It is therefore with good reason that the General Assembly and other United Nations bodies have repeatedly stressed the connexion between them: the fact that these two tasks are likely to succeed together, or else to fail together. In section A, paragraph 5, of the International Development Strategy, the Assembly stated that "the success of international development activities will depend in large measure on improvement in the general international situation, particularly on concrete progress towards general and complete disarmament under effective international control". It further stated that "progress towards general and complete disarmament should release substantial additional resources which could be utilised for the purpose of economic and social development, in particular that of developing countries". In other resolutions it is the obligations of States which have been stressed. In article 15 of the Charter of Economic Rights and Duties of States, the General Assembly stated that "all States have a duty to promote the achievement of general and complete disarmament under effective international control and to utilise the resources released by effective disarmament measures for the economic and social development of countries, allocating a substantial portion of such resources as additional means for the development needs of developing countries".

Such calls have had no effect in practice. The partial measures of arms limitation "Achieved so far have not led to arms reductions or to savings in military budgets of a kind to have measurable economic implications. Proposals for actual reductions in military budgets have been adopted by the General Assembly, but have not been implemented so far.⁵ The military expenditures of the main military spenders diminished through the first half of the 1970s by \$11 billion in real terms (in 1970 prices), but despite this, official development assistance

provided by the developed market economies⁶ actually diminished. In 1970 prices, it fell from \$6.7 billion in 1970 to \$6.6 billion in 1975.

This poor performance does not affect the general validity of the conclusion which has been repeatedly stressed in this and in other reports⁷ that disarmament and development are closely related in material fact and that it is the duty of States to promote both goals and, whenever possible, to let progress towards the former benefit the latter. But, as a means of providing funds for development, the tying together of these processes has not been a success. So dismal is the performance of the Disarmament Decade and so urgent the needs of the Development Decade that it is now essential to move beyond proclamations towards the actual reallocation of resources, basing oneself on whatever approaches seem most promising.

The link between disarmament and development was analysed in detail in a recent report.⁸ Its general conclusions and recommendations retain their full validity and need not be repeated here. The report examined both the link with respect to economic resources in general and the link with respect to specific resources which would be affected as a result of certain partial measures. It emphasised that in case of general and complete disarmament—and also, to a lesser extent, when the cuts in military expenditure are significant but less than total—economic assistance granted by developed to developing countries could and should be greatly increased and would merit high priority in the allocation of released resources. It pointed out that since military expenditures now absorb a larger proportion of the combined GNP of developed than of developing countries, a general (proportional) reduction in military expenditures would have to be accompanied by a simultaneous increase in the fraction of GNP in the advanced donor countries allocated to international development assistance to prevent a widening of the economic gap between countries. Calculations in annex II of that report (based on figures for the United States) indicated that the number of industries which could anticipate declining demand as a result of disarmament, would be less if a substantial part of the released funds were used to increase assistance to developing countries, rather than being absorbed in domestic personal consumption. Similar conclusions were seen to hold in the case of demand for a number of raw materials, indicating the benefits to be derived from as close a connexion as possible between the release of resources in disarmament and increased allocation of resources to international development assistance.

The transfer of technology and the expansion of research related to development and to the problems of developing countries is another issue which figures prominently in efforts to establish a new international economic order. To overcome the enormous disparities in research and technological capability now existing in the world the access of developing countries to technological know-how must be greatly facilitated. Their research capacity, individually or collectively, must be greatly increased and a greater proportion of research and development work in the industrialised countries must be directed towards their needs.⁹

The arms race constitutes a major impediment to such expansion and transfer. On the one hand, there is an enormous diversion of scientific and technological resources to military ends which has already been described. Not only are these resources heavily concentrated in a few industrialised countries, they are also sharply focused on military projects. Most important, perhaps, the flow of increasingly sophisticated weapons and military equipment to developing countries, which is an inevitable corollary of the central technological arms race, takes a heavy toll of the already modest scientific and technological resources of developing countries.

There is another equally serious aspect to this question which vividly illustrates the contradiction between an arms race bent on technological competition and the construction of a more equitable world order. The countries leading the race will naturally seek to retard the proliferation of the latest technologies of actual or potential military significance. This could be in order to gain a military advantage vis-a-vis opponents and perpetuate politico-military leadership vis-a-vis allies (examples relating to the transfer of computer technology and a number of others could be given in illustration of both aspects), or it could be part of an endeavour to slow down the arms race and to help countries on its periphery to avoid pointless and ruinous local arms races. Endeavours in the 1960s to prevent the acquisition of supersonic aircraft by the countries of Latin America is one of the not very numerous examples of deliberate and sustained attempts of this kind which have been successful, at least for a while.

Restraint of this kind, imposed unilaterally by supplying countries, by potential recipients in some specific area, or multilaterally by suppliers and potential recipients acting in concert, is in many crises obviously beneficial for everyone.¹⁰ But, problems arise when technologies are applicable both for military purposes and for important civilian ends,

the question of nuclear technology being the outstanding example. For such dual-purpose technologies attempts to control the arms race, not by abolishing weapons systems but by confining their possession to a limited set of countries, will inevitably come into conflict with the aim of making existing technology available to all countries in a nondiscriminatory manner. This dilemma between contradictory attitudes towards free dissemination of technology is, of course, inherent in the arms race. Temporary and partial measures involving a distinction between haves and have-nots may in some cases be possible, but there is no effective way out other than genuine disarmament. Short of this the development of internal co-operation in the peaceful uses of available technologies, without barriers and without discrimination, as implied in the quest for a new international order will necessarily remain limited.

The third major aspect of the arms race in terms of the international system is its political effects in general, and its effect in fostering and exacerbating conflict in particular. In an international environment dominated by an arms race on the scale of the last decades, military-strategic considerations tend to shape the over-all relations between States, affecting to a greater or lesser extent all other relations and transactions. Foreign policy and international exchanges generally tend to become subordinated to "security" considerations in the widest sense. But, there is no natural limit to the precautions that may seem necessary. In this way, the creation of spheres of influence, local, regional or global, and sometimes interference, direct or roundabout, in the domestic affairs of other States becomes a natural corollary of a worldwide arms race. Unless an end is put to the arms race, unless military troops and bases are withdrawn from the territories of other States, and unless a vigorous process of disarmament and, particularly, nuclear disarmament is initiated, there can be no guarantee that relations among States would be, in fact, based on the principles of national independence and sovereignty, of non-interference in the domestic affairs of other States, of full equality of rights, of non-resort to force or to the threat of force and of the right of every people to decide its own destiny.

Great preponderance of military power as possessed by some of the major industrialised countries and as is perhaps emerging in some regional contexts will sometimes lead countries to adopt ultimative and rigid policies vis-a-vis other countries or to the use of force, the threat of force or simply an ostensible display of force. As a result of the arms race, fear and suspicion are generated along some axes, but along others, special, favoured relationships develop. In some cases

these are no less conflict-promoting and no less dangerous. There may occur, on the one hand, a transfer of the conflicts of the central powers to peripheral powers and, on the other hand, an involvement of central powers in local conflicts. This is one of the mechanisms through which central and peripheral confrontations may become linked in such a way as to enhance the dangers of both.

While it is probably not true to say that the arms race causes conflicts in any strict sense—the causes of conflicts are ultimately political, economic, etc.—a context of intense military preparedness can, of course, greatly enhance them, cause them to erupt into war, to spill over into neighbouring countries and block their peaceful settlement. The arms race produces a political climate in which minor incidents can be blown up to international crisis proportions and in which even insignificant disputes which under other circumstances could have been easily settled by negotiation become matters of great principle and the object of armed clashes.

It is customary to regard the arms race as a situation countries are drawn into involuntarily and are carried along by apprehensions caused by the military programmes of others. There is, of course, a considerable element of truth in this. Threats, pressures and interventions have been sufficiently common in recent years to indicate, on the one hand, that some countries face genuine security risks and, on the other hand, that for some countries, the use of military power to achieve political ends has not been given up altogether. Such use can take many forms, some more bellicose than others, some more immediately dangerous than others, ranging from armed intervention to mere ambiguous threats such as a naval presence which others may perceive as a means of interference or intimidation.

The arms race tends to render the international political environment more rigid and more resistant to change. It fosters concerns for the political and social options chosen by other countries, in particular by those countries that are deemed to have strategic importance, and it promotes a pattern of alliances and alignments that may reinforce confrontation and, in some cases, domination. Under such conditions processes of social transformation or emancipation are likely in many cases to be resisted. They become painful processes, postponed for too long, and they may end in protracted and destructive conflict, as several of the longest and most painful wars of the recent past have shown.

The task of eliminating, the remnants of colonialism has been one of the major sources of war and conflict in the past decade. While the

process of establishing national sovereignty has been completed in the vast majority of cases, there remain, nevertheless, a number of unresolved problems and disputes throughout the world. It is inherent in the very idea of rapid development and of a new international economic order that many traditional patterns and relationships, domestic and international, will have to be changed. This is one reason why the rapid development and proliferation of modern military technology, the rapid increase in the number of countries possessing highly capable weapons systems, suited for offensive as well as defensive roles must cause apprehension for the future. For this reason too, a halt to the arms race at its centre, the necessary precondition if it is to be halted effectively at its periphery, has become an urgent imperative.

Indeed, in recent years the international transfer of arms has grown particularly dangerous. For most suppliers commercial considerations as against a coherent policy have become predominant to an unprecedented degree and the only remaining constraint appears to be the resources recipients are able and willing to commit to the purchase of armaments. As a result, the military scene in many parts of the world has been changing rapidly. And rapid change in this field, irrespective of whether the balance of real military capability fluctuates, inevitably generates an atmosphere of heightened tension and instability. In several important cases the sophistication of recently delivered equipment is so far beyond the technical resources of the recipient country that the equipment cannot be used or serviced without comprehensive assistance from the supplying country, particularly in the form of technical and managerial personnel. The intimate involvement of foreign personnel (usually nationals of the main supplying countries) in the military programmes of recipient countries and the fact that such assistance will be required over extended periods increases the risks that supplying countries will become embroiled in local conflicts.

While traditional forms of military integration and polarisation, alliances, bases and the stationing of troops on foreign soil remain, new ones are in the process of being established. Supplementing the growing volume of arms transfers, various forms of international cooperation in arms production are gaining importance, even though only the contours of this process are visible so far. Among industrialised countries the tendency is towards co-production, several countries pooling existing facilities to produce different components of one particularly costly and sophisticated weapons system, and, less

frequently, collaboration (and cost-sharing) in design and development. Among developing countries the usual pattern is to establish a local maintenance capability and then work backwards through repair, assembly of imported components, local production of some of the components, and so on. More recently, some countries have been able to accelerate this process by purchasing complete production facilities, the foreign contractor, firm or government, providing the whole system: design, plant, know-how and some of the parts for the finished weapon.

Seen from a military and economic angle, this may be regarded as merely another means of arms procurement, possibly providing some independence from external arms suppliers and saving foreign exchange, even though the absolute cost will usually be higher. But, seen from a social and political angle, something much more important and radically new is involved. In some cases, it could be the beginning of a process whereby the military-industrial complexes of the supplying countries expand beyond their own borders, take root abroad and reproduce the whole network of relations between industry, producers and sub-contractors, unions, Government and armed forces in the new environment. With the transfer of complete operation weapons systems and the provision of military advisers, as with other forms of military co-operation, relations between recipient and supplier tend to remain confined to the armed forces. But, in the types of multilateral production or dependent domestic production considered here, it is the whole set of mutually supportive relations and of vested interests in the perpetuation of the armaments process which are built up and which spread through society, far beyond the military establishment proper. While it is not likely, even in the long run, to provide any genuine independence from the main arms producing countries, this multinational expansion of military-industrial complexes could in time become a significant impediment to effective arms limitation and disarmament in the regions where it is taking place. This underlines once more the urgency of achieving progress towards disarmament. The magnitude and complexity of the problems will only increase over time.

The preparation and implementation by all countries of a comprehensive programme of disarmament, and first of all nuclear disarmament, is an urgent necessity to avert the danger of nuclear war, foreclose use of force or the threat of the use of force, establish a lasting peace; eliminate the factors opposing the democratisation of international relations and build step by step a new international economic, political and social order.

REFERENCES

1. Kende, *Local Wars in Asia, Africa and Latin America, 1945-1969*, Studies on Developing Countries, No. 60, Budapest (1972).
2. *Official Records of the Economic and Social Council, Sixty first Session Supplement No. 6 (E/5793)*, para. 21.
3. Statistical evidence may be found in (the fact that bilateral aid has primarily accrued to developing countries in the medium to higher income brackets (\$200-\$800 *per capita* and above \$800), whereas it has been much smaller on a *per capita* basis for the poorest countries. (See "Foreign Aid and Development Needs", E/AC.54/L.80.)
4. Information on the financial contributions of the centrally planned economies is too scanty to permit meaningful comparisons. Disbursements by OPEC members to other developing countries have become a significant contribution to the total flow of assistance. The concessional component of disbursement in 1974 was \$3.4 billion or 1.9 per cent of the gross national product of OPEC members. See *Official Records of the Economic and Social Council, Sixty-first Session, Supplement No. 6 (E/5793)*, para. 34.
5. General Assembly resolution 3093 A (XXVIII) of 7 December 1973 recommended that all States permanent members of the Security Council should reduce their military budgets by 10 per cent from the 1973 level during the next financial year; appealed to those States to allot 10 per cent of the funds so far released for the provision of assistance to developing countries; and expressed the desire that other States, particularly those with a major economic and -military potential, should act similarly. Pursuant to a second resolution (3093 B (XXVIII)) a report examining this and analogous proposals, *Reduction of the military budgets of States permanent members of the Security Council by 10 per cent and utilisation of part of the funds thus saved to provide assistance to developing countries* (United Nations publication, Sales No. E.75.1.10), was prepared by a group of experts appointed by the Secretary-General.
6. *Ibid.*
7. *Disarmament and Development*, Report of the Group of Experts on the Economic and Social Consequences of Disarmament, New York, 1972, United Nations publication, Sales No. E.73.IX.1.
8. *Ibid.*
9. J. Tinbergen (co-ordinator) *Reshaping the International Order*, New York, 1976, p. 152.
10. Apart from the Non-Proliferation Treaty, the only noteworthy current example is the effort being conducted since 1974 by the six Andean Pact States (Bolivia, Chile, Colombia, Ecuador, Peru and Venezuela) and Panama and Argentina to limit by common accord their arms acquisitions in conformity with the Declaration of Ayacucho. No concrete results have come from it so far.

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**ARMS RACE: SOCIAL AND
ECONOMIC CONSEQUENCES**

The main task of this report has been to analyse the social and economic consequences of the arms race. What emerges with particular force is the multiplicity of those consequences, not only in the field of security proper, but in all aspects of civil life. The social, political, technological and industrial options of countries are affected by their participation in the arms race. International policies, not only in the military field, but also in the fields of international trade and of co-operation and exchanges generally, are influenced by the climate of confrontation and apprehension engendered by the arms race. Many of the major problems faced by the world community, problems of development, economic imbalance and inflation, pollution, energy and raw materials, trade relations and technology, and so forth, are enhanced and exacerbated by the arms race. Progress in other areas such as health, education, housing and many more is delayed owing to lack of resources.

This question of the relationship between armament and disarmament, on the one hand, and other aspects of social, economic and political development, on the other, has received all too little attention in the past. This report has attempted to indicate these interrelations, but an adequate analysis would require much deeper study. It is remarkable, for example, that recent studies of the future of the world economy, analyses relating to the establishment of a new international economic order and the United Nations conferences on a variety of contemporary problems which have been held in recent years have in most cases omitted consideration of the implications of the arms race altogether, despite its obvious and massive implications in each of these cases. From every point of view, it would be an advantage if in such studies and analyses and in the elaboration of programmes and recommendations the consequences of and for the arms race were

specifically considered. Both aspects of the problem need to be taken into account: on the one hand, the volume of resources consumed on the arms race and the socially constructive uses to which they could be put; and on the other hand, the social, political, economic and Institutional processes, both domestic and international, whereby changes in military policies affect the future course of development in other fields and are themselves affected by it.

Discussion of the consequences of the arms race—social, economic and military-political—presupposes some conceptual view of the phenomenon itself. Likewise, effective progress towards disarmament presupposes some understanding of the forces and processes that drive the arms along. There is a growing body of literature on this *question*, but it is mainly confined to consideration of one or a few countries and to exposition of the one or the other particular model of the armaments process. The impact on disarmament efforts has therefore been virtually non-existent. What seems to be needed is not only an elaboration or integration of these several approaches to obtain a clearer understanding of the interplay of forces that sustain the arms race, but the gathering together of these separate strands in a way that could inform and guide action. What is even more needed is a clear outline of the views of different countries and groups of countries as to what constitutes the fundamental mechanisms of the arms race. Effective action to reverse it would seem to presuppose some agreement as to where the problem lies and what it consists of. It is not the task of this group, whose terms of reference were to examine the consequences of the arms race, to do more than call attention to the fact that there is here an area where further study is called for.

It has been stressed throughout this report that the two most important goals of the international community, disarmament, on the one hand, and development, on the other, which the States Members of the United Nations are committed to pursue vigorously, each in its own right, are in fact intimately linked. Development at an acceptable rate would be hard if not impossible to reconcile with a continuation of the arms race. Research and development is one area where the misdirection of efforts is glaring. In this as in other respects, vast resources, badly needed for development, are being consumed as countries make ever greater sacrifices for military purposes.

Conversely, substantial progress in the field of development is increasingly understood to be essential for the preservation of world peace and security. These cannot in the long run be preserved in a

world where large and growing economic gaps separate the countries of the world. Genuine security cannot be assured by the accumulation of armaments but only through disarmament, co-operation and the growth of exchange and interdependence in a world of diminishing inequalities.

Substantial progress in the field of disarmament would represent a decisive turning point as regards development, imparting new momentum to efforts in this direction and greatly facilitating progress in this field. Progress towards disarmament would release internal material, financial and human resources both in developed and in developing countries and would permit their redeployment to purposes of development. In the case of many developing countries, these resources are relatively small in absolute terms, but in other cases they are very substantial, and in all cases the impact on development would be significant. The relaxation of the climate of fear, hostility and confrontation which progress towards disarmament would bring about, would remove some of the barriers now hampering international exchanges in general and the free circulation of raw materials and advanced technology in particular, and would greatly facilitate the free choice by each country of its particular path towards development. Last but not least, substantial progress towards disarmament would represent major savings in industrialised countries and would make possible substantial increases in development assistance. In fact, disarmament should be so designed that this close connexion between disarmament and development gets full recognition. Provisions to ensure the transfer to development purposes of part of the resources released, provisions to ensure that measures of armaments limitation are so designed that they do not impede the transfer of technology for peaceful ends and other similar provisions must be an integral part of disarmament measures.

The 1970s were proclaimed Disarmament Decade, but through the first two thirds of that decade progress has been meagre and fell far short of what the vast majority of members of the international community would genuinely prefer. A number of agreements, several of them of great importance in their own right, have been reached, but progress has been much too slow to constrain the momentum of the arms race to any significant extent, let alone reverse it. If results in the future are to be less disappointing than in the past the reasons for this failure must be carefully examined. In this report a number of factors which may be important in this respect have been considered: the

inertial forces which tend to develop in a qualitative arms race, the system of reciprocal compulsion it generates, and the fact that partial agreements on limitations are easily overtaken by developments in other areas of the arms race.

All of this points to one of the serious short-comings of disarmament efforts for over a decade: the lack of a comprehensive scheme in which partial measures would find their place and, supplementing each other, would add up to a coherent strategy. General and complete disarmament under effective international control must remain the ultimate-goal. Agreements to regulate and confine the arms race in the meantime are means and, in some cases, pre-conditions for achieving that goal, but they cannot take its place. Effective restraining measures in one field, even if they are adopted, can be circumvented, and in the longer run new countries would be likely to enter the competition. In this context, it is imperative that negotiations on general and complete disarmament should receive greater and more urgent attention than has been the case in the past,

Effective progress towards disarmament presupposes the elaboration of an over-all plan, persuasive in concept and workable in application, a "Strategy for Disarmament" as it were. This must be based on a thorough assessment of the problems involved, the forces propelling the arms race, and the experience of the past. It should involve specification of priorities, decision on targets and adoption of programmes and, where appropriate, time-tables. This strategy must be comprehensive enough to ensure a fair and equitable response to the concerns of every country, and flexible enough to permit taking realistic and concrete steps in the immediate future, in intermediate stages and in the final stage. In short, a framework is needed within which endeavours can be co-ordinated and against which progress can be measured. This is no less essential in the field of disarmament than it is in the field of development, or in any other field where a multiplicity of efforts is to lead effectively to a common goal.

It is not the task of this group to outline such a strategy, but some points of particular importance emerge from our work. Measures of disarmament and military disengagement affect the vital interests of all States, directly or indirectly. All States must necessarily be engaged in the task of eliminating the sources of conflict and tension, and of moving rapidly to the adoption and implementation of disarmament measures under effective international control. The determination of tasks and priorities must engage the participation of all States, even

though specific measures may often be negotiated more effectively in regionally or otherwise limited fora.

Indeed, to impart a new momentum to disarmament efforts it seems necessary not only to engage all countries in these endeavours on a basis of equality, but also to involve the peoples of all countries more actively and in a more coherent and organised fashion than has been the case hitherto. A variety of movements and organisations—political, professional, religious and others—can play an important role in this respect, and have in fact done so in the past. The negative consequences of the arms race, in terms of endangering their existence and in terms of social and economic sacrifices, affect all peoples of the world. They have an obvious right to information about the military policies and programmes of Governments and their implications. Much of the secrecy in this field is not justified by military requirements. In some cases, it results from mere tradition, in others, it serves such purposes as shielding questionable or unnecessary armaments programmes from public scrutiny and public criticism. Without endangering the security of any country much greater openness of information could and should be applied in this field.

Given the character of the present arms race, effective disarmament will presuppose progress in two directions simultaneously: curtailment of the qualitative arms race, and reductions of military budgets. The first involves the erection of boundaries against further developments in weaponry. The agreements on biological weapons and on anti-ballistic missile systems are steps in this direction. Responsibility for continued and more rapid progress in this respect overwhelmingly rests with the main military Powers and with the two largest Powers in particular, which are alone in producing the full range of modern weapons and where most innovations in military technology and all innovation in nuclear weapons and their means of delivery originate. As is evident from chapter I, it is particularly important that mutual limitations agreed upon by the largest Powers should involve important qualitative limitations of nuclear weapon systems and should involve curtailment of military research and development.

The second major task of immediate urgency is to bring about substantial reductions in the military budgets of all countries and particularly of those whose military budgets are the highest. All countries share responsibility for taking prompt steps in this direction. In conjunction with this, steps must be taken to facilitate the conversion of industries and installations to civilian ends. Not only would substantial

budget reductions mean a turning point in efforts to achieve disarmament and to diminish the risks of war, it would also release internal resources for the social and economic development of countries and greatly improve the prospects for the necessary expansion of aid to developing countries. What is needed is the adoption of a specific time-schedule for gradual but substantial co-ordinated reduction of budgets, first of all of those of the largest and most heavily armed countries and of strategic rivals locked in confrontation, specifying criteria and proportions for these reductions and ensuring that they are irreversible and that the means saved are in fact allocated for peaceful purposes. Is such cuts in military expenditure are not accompanied by any further specifications, it is to be expected that they would in many cases primarily affect the size of conventional armouries and of standing forces. Indeed, countries able to do so might be tempted to compensate a decline in numbers by improved performance, in other words by a more vigorous pursuit of the qualitative arms race. This again indicates the importance of co-ordinating partial measures adopted in different fields.

Nuclear disarmament must be given the highest priority both because of the intolerable threat posed by nuclear weapons, and because current and foreseeable developments in their means of delivery and in the doctrines governing their use, and the prospect of their proliferation to new States will enhance this threat and could make disarmament vastly more difficult in the future. As regards nuclear weapons proliferation, regional limitations and restraints, such as the establishment of nuclear free zones, would constitute important steps. An important step would also be the conclusion of a comprehensive nuclear test ban treaty. Progress in the direction of nuclear disarmament would be greatly facilitated by agreement on certain targets and time-schedules for phased reductions in the nuclear arsenals and for outlawing the use, development, production and possession of these weapons.

Finally, regional disarmament and disengagement designed to diminish the sources of tension and conflict must be part of *a* comprehensive approach. There is need, on the one hand, for general targets regarding military disengagement on land and on the seas, dismantling of military blocks and withdrawal of troops and bases from foreign territories, and, on the other hand, for immediate consideration of specific areas and regions, such as Central Europe, the Middle East, the Indian Ocean and the Mediterranean, taking full account of the precise character of the security problems of the countries concerned. Progress in these areas is again linked to or even conditional

upon progress in the limitation of the arms race of the main Powers and their regional disengagement. It should be borne in mind that the bulk of the world's military expenditures is being devoted to the accumulation of conventional arms. The build-up of conventional arms in many parts of the world in recent years has generated increasing concern. Without denying the overriding importance of nuclear disarmament, which is undoubtedly the most urgent task of our time, nor the inalienable right of every sovereign State of self-defence, it should be stressed that maybe the time has come to study this problem thoroughly and to seek feasible ways to formulate international agreements on the transfer of weapons.

Progress towards disarmament, it has been indicated, will require systematic co-ordination and planning with the participation of all States. This points, on the one hand, to the need for more effective means at the international level for information, research and evaluation on questions of disarmament to enable all Member States, not only the largest ones, to obtain effective insight and to take initiatives in questions of disarmament. On the other hand, the United Nations, and first of all its plenary organ, the General Assembly, whose task it is to harmonise the efforts of States in the attainment of their common goals, should be able to fulfil its role of over-all guidance in the field of disarmament more effectively than it has been able to do in the past. Of great importance in this respect could be the special session of the General Assembly to be held in 1978. It is also to be noted that consideration has been given by the General Assembly to the convocation of a World Disarmament Conference.¹ There is also a need for expert advice and assistance on a more continuous basis to follow developments closely, to advise the General Assembly, the Secretary-General and Member States on questions of disarmament, and to assist in the elaboration, specification and adjustment of targets and programmes. Improvement of the machinery of the United Nations in this direction appears to be necessary if the world Organisation is to fulfil its task in the field of disarmament.

REFERENCE

1. General Assembly resolutions 2030 (XX) of 29 November 1965, 2833 (XXVI) of 16 December 1971, 2930 (XXVII) of 29 November 1972, 3183 (XXVIII) of 18 December 1973, 3260 (XXIX) of 9 December 1974, 3469 (XXX) of 11 December 1975 and 31/190 of 21 December 1976.

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**DYNAMICS OF THE ARMS RACE:
SOCIAL AND ECONOMIC IMPACTS**

For a number of years now the world has been diverting annually about \$350 billion in today's prices to military purposes. The leading six countries in terms of military expenditure¹ account for three fourths of this total. Altogether 5 to 6 per cent of the world's total output of goods and services are diverted to military ends. In individual countries the percentage diversion is mostly in the 2 to 8 per cent bracket, although the extremes range from less than 1 per cent to over 30 per cent.

The arms race is increasingly a world-wide phenomenon, and, although its intensity varies markedly between regions, few countries and no major region has stayed out of it. The competition in armaments between the largest military Powers is by far the most important. It involves the greatest diversion of resources, the greatest inherent dangers and constitutes the principal driving force of the world-wide arms race. This competition is even more intense than is suggested by the immense size and the rapid expansion of their arsenals, because it takes place primarily in a qualitative rather than a quantitative dimension, each new generation of weapons being more complex and more destructive than the systems it replaces. In such areas as the Middle East the competition is both quantitative and qualitative. In some other parts of the world the term "arms race" is less appropriate, but in every major region and in the majority of countries the process of expanding and improving military forces appears to be gathering momentum. This is particularly the case in regions where countries are exposed to political, military and other kinds of pressures, where the rivalries of other Powers lead to involvement or interference, where territories are under foreign occupation and where countries feel their sovereignty and independence to be directly threatened. This, in turn, may intensify the wider arms race.

This comprehensive character of the arms race is also reflected in its proliferation into the oceans and into space. In the oceans, military rivalry has been increasing in recent years, and space has become of paramount importance for the major Powers for a variety of military purposes such as navigation, surveillance and target identification.²

The primary engine of this world-wide arms race is constituted by the qualitative arms race among the largest military Powers. This is due chiefly to the virtual monopoly of these Powers in development of advanced military technology, to their overwhelmingly large share of world production and world exports of advanced weaponry, and to the global character of their interests, politically and militarily. The six main military spenders not only account for three fourths of world military spending, but for practically all military research and development (R and D) and for practically all exports of weapons and military equipment. All significant developments in armaments originate here and spread from here to the rest of the world, with greater or lesser time lags.³ For many types of conventional weaponry these time lags seem to have diminished in recent years. Meanwhile, as these weapons are being assimilated in the countries at the periphery of the arms race, new generations are under development at the centre to supersede them, preparing the ground for a new round of transfer and emulation. Outside of this small number of producing countries, arms races or competitions are substantially and often wholly dependent on external supplies of arms, technicians and instructors.

National arms-inventories are not published, and for most types of armaments estimates of world stocks of weapons would be quite uncertain, partly because figures are not known for all countries and partly because different models of the same general type of weapon system, supersonic fighter aircraft, say, cannot be added together to give a world total because performance characteristics and the conditions under which they might be used are too diverse. Nevertheless, some rough indications can be given:

Current stocks of nuclear weapons are sufficient to destroy the world many times over. These weapons and the missiles, aircraft and artillery to deliver them are constantly being diversified and their performance characteristics improved. The numbers of nuclear warheads in arsenals is not known, but the number of carriers of different types is known with a fair degree of accuracy. From these numbers it can be inferred that in 1974 so-called "strategic" nuclear forces in the United States and the Soviet Union included 10-11,000 thermonuclear warheads

deliverable from missiles or bombers.⁴ This number has been rising very fast. Nuclear weapons arsenals are also increasing in other nuclear weapons states. Figures given by SIPRI indicate that the number of missile-deliverable warheads of the two major nuclear Powers increased from about 3,700 in 1970 to nearly 12,000 in 1976, a rise by more than a factor three.⁵ Their combined explosive power is believed to be equivalent to 1.3 million Hiroshima-size bombs.⁶ With regard to so-called "tactical" nuclear weapons the situation is more uncertain. Their number is believed to be about four times larger than the number of "strategic" nuclear warheads, but their combined explosive power is but a fraction of the latter. According to one source it is equivalent to about 700 million tons of TNT or to some 50,000 Hiroshima-type bombs.⁷

Even though plausible estimates of numbers of major types of conventional weapons such as aircraft, fighting vessels and tanks could be constructed for most countries,⁸ aggregate figures are not very meaningful for the reasons just given. Only for fighting vessels are figures available which attempt to measure the current value of stocks, taking account of the size, vintage and armament of fighting ships and making allowance for technological improvements.⁹ Even these estimates are based on assumptions which are open to challenge, and they can provide no more than a crude indication of trends. They indicate that the total number of fighting ships in the world has changed little over the years, although the value of the world stock (in constant dollars) doubled from 1960 to 1970 and rose by a further 30 per cent from 1970 to 1976. This pattern appears to be valid for several other types of armaments as well: world stocks reckoned in numbers have remained fairly constant, but in terms of cost and performance world stocks are increasing very rapidly, and, in the 1970s in particular, current models have been spreading very fast to an increasing number of countries. This is true in particular of modern aircraft. Only 13 developing countries had supersonic aircraft in 1965.

A decade later that number had risen to 41. Over the past 30 years a few major arms-producing countries together developed and procured over 70 distinct types of interceptors, fighter and attack aircraft and twice as many variants of these types. To this may be added 30 to 40 types or variants cancelled before they went into production. Even after correcting for inflation, the unit price of fighter aircraft has been doubling every 4 to 5 years, rising from about \$0.25 million per aircraft (in 1975 prices) during the Second World War to well over \$10 million today, reflecting improvements in performance and armament. All

aspects of the cost of most modern weapons systems, development, manufacture, operation and maintenance have risen very sharply.

Since the present report deals with the economic and social consequences of the arms race and military expenditure, the main stress in the following chapters will be on the enormous volume of men and resources devoted to military purposes and withheld from useful civilian production. But, the distinguishing characteristic of the present arms race is the continuous qualitative change in the weapons and equipment being produced and deployed. It is primarily this feature that gives the arms race its momentum and it immeasurably complicates efforts to stop or control it.

The past decade has seen a continuous stream of new developments in the sphere of nuclear and conventional means of warfare. Because these technological and qualitative changes have not displayed the spectacular, eye-catching qualities which characterised some earlier developments, such as the advent of the atom bomb or of space technology, there is a danger that it may seem as though military technology was remaining relatively unchanged. Such complacency would be entirely unjustified. Recent developments have profoundly influenced military capabilities, world-wide destructive potentials and strategic conditions, possibilities and doctrines. In several respects, it will be seen later, these developments greatly reduce the perils of the nuclear arms race. In the key respect of technological development and its implications the arms race is today as intense and danger-ridden as it has ever been.

This cannot be the place for an exhaustive enumeration or a full evaluation of the more recent qualitative phenomena in the armaments field. But, a few of the more outstanding developments shall be mentioned to indicate to what extreme degree the arms race is now dominated by rapid technological development. It will be seen in particular that, given the high proportion of military expenditure devoted to R and D, the fact that military expenditures for the world as a whole and for some important countries remained relatively stable in recent years in no way implies a relatively stable military situation.

The most important and spectacular aspect of the arms race in the 1960s was the development and the full-scale deployment of intercontinental ballistic missiles (ICBMs) and of submarine-launched missiles (SLBMs), and the associated deployment of satellite surveillance and communication systems. By the end of that decade there was

widespread concern that a new, arms-race spiral may result from the development of anti-ballistic missile systems (ABMs) and from counter-measures in the form of increasing numbers of launchers and, more particularly, of increasing numbers of warheads per launcher to saturate ABM systems. The technical form for the latter development is multiple and independently targetable re-entry vehicles (MIRVs).

The first agreements on the limitation of strategic arms between the United States and the Soviet Union (SALT I), signed in May 1972, set ceilings on the number of ABM sites and ICBM and SLBM launchers, not least to prevent this development. They succeeded in halting the deployment of ABM systems. Since 1972 the numbers of launchers have been increasing and are approaching the agreed ceilings. In 1976, there were in round figures 2,500 ICBMs and 1,400 SLBMs in these two Powers together.¹⁰

It is mentioned elsewhere in this report that the SALT agreement has had positive effects but it is important not to lose sight of the serious inadequacies in this agreement with regard to the limitation of strategic arms. Thus, in recent years the arms race in strategic nuclear weapons has increasingly taken a qualitative direction. Vigorous R and D programmes on improved ABM systems have been maintained. The SALT agreement as a whole has had no discernible impact on the extent of MIRV deployment. As a result the number of ICBM and SLBM deliverable nuclear warheads has been rising by about 1,000 every year, even though the number of ICBM and SLBM launchers has remained relatively constant since 1972. (This means that the rate of growth of the number of warheads has declined since 1972.)¹¹

Moreover, a major post-MIRV innovation is already at an advanced stage of development. This is a manoeuvrable re-entry vehicle (MARV) which can change direction in the terminal stages of its trajectory. This could make defence against ballistic missile attack more difficult, but in particular, if combined with developments now taking place in terminal guidance systems, it can provide MARVed missiles with pinpoint accuracies of a few tens of metres instead of current accuracies of somewhat less than one kilometre. With such accuracies, the silos now protecting the land-based ICBMs can be destroyed with near certainty with a single warhead at the first attempt. As a result it becomes possible to consider using "strategic" nuclear weapons in new ways. In addition to being a means of massive reprisals against centres of population and industry to serve as a basic deterrent, it becomes possible to think of using ballistic missiles in "counter-force"

roles to gain military advantage at the outset of a war by striking at the weapons and military installations of the opponent, or to use them to conduct supposedly "limited" nuclear war. The adoption of doctrines of this kind could greatly enhance the probability of nuclear war.¹²

No less significant are the implications of the deployment of long-range cruise missiles. These weapons, now under development, are best described as small, highly manoeuvrable, low-flying pilotless aircraft. They can be equipped with a nuclear as well as a conventional warhead. Current models have ranges of several thousand kilometres and accurate guidance systems, which readjust the trajectory at intervals by comparing terrain features with a map. The accuracy is therefore independent of the range. It will be impossible to determine from its geometry alone whether a cruise missile carries a nuclear or a conventional warhead and, within wide limits, what range it may have. Moreover, it is a small and easily concealed vehicle. Future agreements on strategic weapons may thus become very difficult to negotiate because they would be difficult to verify. The cost of the cruise missile will be at least an order of magnitude less than ICBMs, so that in the years to come it will be well within the financial means of the smaller nuclear powers and of many other countries as well. For some time the exorbitant cost of the latest types of nuclear weapons carriers (ICBMs and SLBMs) has helped maintain the two main military Powers in a class by themselves. In the foreseeable future the importance of this factor may greatly diminish.

Developments in nuclear weapons technology proper are equally ominous, particularly the development of small, low-yield nuclear weapons, of enhanced radiation weapons and of tactical concepts for their use in battle. Delivered with higher accuracy and causing less collateral damage per warhead, their use on the battlefield may seem more acceptable, so that the step from non-nuclear to nuclear war may be more readily taken. Once they are used on the battlefield, escalation towards full-scale nuclear war becomes a dangerous possibility.

The aggregate effect of these developments cannot be understood in terms of the gradual improvements in performance which have been so much a feature of the 1960s that they are hardly news any more. The importance of the changes now underway in the field of nuclear armaments and their carriers is not that their performance in missions traditionally assigned to them is improving year by year, but that essentially new types of missions are becoming possible. New technologies open the way for new doctrines. These in turn give an

appearance of rationality to the deployment of weaponry embodying these technologies. At the same time they increase the dangers of war and alter the terms of the disarmament equation, rendering it more complex and more intractable.

Developments in the military use of space have been an essential concomitant, in fact a necessary precondition, for some of these changes. These developments have been overshadowed in the public mind by civilian space exploits. Yet, they have been of decisive importance for developments both in nuclear and in so-called "conventional" warfare. In the Indo-China war satellites were used for communication, for weather forecasting prior to bombing raids and for navigation for naval bombardment, but only now are the full potentialities of these means materialising. Satellite technology is having a decisive impact in at least three fields, conferring substantial superiority on the major military Powers:

- (a) Target identification, navigation and damage assessment in connexion with counterforce strategies in nuclear warfare,
- (b) Surveillance, target identification and navigation in "conventional" warfare, and
- (c) World-wide intelligence and surveillance of the military programmes of other countries and of wars in which the major Powers are not directly involved.

Potentially, the consequences of this latter capability could be both positive and negative: verification of agreements on arms limitations or disengagement, on the one hand, and area policing and assistance in aggression, on the other. Citing once more an American example because these are the best known, the NAVSTAR programme may serve to indicate what is becoming possible in just one field. It is a 24-satellite system which is to provide three-dimensional positioning throughout the world to within about 10 metres. Among its many possible uses is the guidance of both nuclear and non-nuclear forces in so-called "strategic" roles and on the battlefield. It is to be established over the period 1977-1984 at a cost in the \$3 billion range.¹³ Not only will it allow perfectly accurate guidance of ballistic missiles against fixed targets, an essential component of the counter-force strategy already mentioned, it is also likely to enhance greatly the effectiveness of sea, ground and air forces in conventional warfare and local wars. Many of these military developments come out of civilian space programmes, and in fact the two are not readily separable. In technical terms MIRV was a direct descendant of multiple satellite launching systems, much

as manoeuvring and docking techniques are at once ancestors and offspring of anti-satellite weapons being developed and tested.

The proliferation of nuclear technologies continues at an accelerating pace. France and China, it was mentioned in the 1971 report, acquired a nuclear weapons capability in the 1960s. In 1974, India, which is not a party to the Non-Proliferation Treaty, conducted a nuclear explosion experiment underground. It was officially termed a peaceful nuclear explosion experiment. This explosion demonstrated how readily and cheaply¹⁴ a small nuclear weapons capability could be derived from a major civilian nuclear programme.¹⁵ In other cases a nuclear weapons capability could have been acquired without being demonstrated in a nuclear explosion. Civilian nuclear programmes, and with them, to a variable degree, the technical expertise and the fissile material required for military programmes have spread all over the world during the 1970s. In 1975, 19 countries had nuclear power plants in operation, and another 10 countries will have them by 1980.¹⁶ Experimental reactors are now in operation in well over 50 countries. As far as most industrialised and several developing countries are concerned, there are no longer serious technological or economic barriers against initiating a nuclear weapons programme. The only barriers to horizontal proliferation are now political: obligations assumed under the Non-Proliferation Treaty, the good sense of Governments and the example to be set in the coming years by the nuclear weapons Powers in agreeing to reduce their own nuclear arsenals. It is, of course, the continuation of the nuclear arms race, not by itself the spread of peaceful uses of nuclear energy, which endangers peace. Stocks of nuclear weapons and the continuation of the nuclear arms race are factors which encourage horizontal nuclear weapons proliferation. The danger of the proliferation of nuclear weapons can be removed by outlawing and halting the production of such weapons and by proceeding to destroy them. The resolutions of the United Nations General Assembly have repeatedly emphasised that the Non-proliferation Treaty should become universal. It is consequently important to carry out the system of control envisaged in article III of the Non-Proliferation Treaty and that the parties to the Treaty conclude the safeguards agreements with the International Atomic Energy Agency envisaged in article III of the Treaty.

Also as regards conventional weapons developments have been far-reaching. Throughout the 1960s conventional weapons systems underwent continual and rapid refinement in terms of size, speed, propulsion, fire-power, accuracy, and so forth. Unit costs for major

weapons systems typically doubled in real terms during this period. For aircraft it was noted they doubled about twice as fast. Sophisticated weaponry, including supersonic aircraft, became commonplace in the armouries of industrialised as well as less developed countries. These developments continued unabated through the period under review. In addition, technological advances in several areas have been combined to produce new types of conventional weapons with potentially far-reaching military and political implications.

New precision guided munitions (PGMs), remotely piloted vehicles (RPVs) and other devices have been developed to carry a conventional warhead to its target with hit probabilities close to 1, or, in the case of RPVs, for reconnaissance and similar missions. This group of weapons is a whole family of devices using the latest developments in such fields as laser technology, microelectronics, electromagnetic sensors in the radar, infrared and optical ranges and wide-band data links for a variety of remote or automatic guidance and/or homing devices. A first generation of PGMs made their appearance in the Indo-China war. In the Middle East in 1973, the enormous potential of such weapons against tanks and aircraft was demonstrated. Both the type of technology involved and their cost make PGMs accessible to many countries, and, indeed, many have them now in their inventories.

Such precision munitions are expected to have battlefield implications no less far-reaching than anything which has happened since the Second World War. The design and mission assignment of the classical weapons carriers, aircraft, ships and tanks, and even the preponderant place they have had hitherto in contemporary armouries might be radically changed. The new weapons, together with developments in such areas as night vision devices, battlefield surveillance and communications, are likely to accelerate the pace of modern warfare and to place a still higher premium on standing military forces. Last but not least, with dramatic improvements in accuracy, the yield of the explosive charge becomes a less important parameter in performance. There have been suggestions, for example, that some of the missions now assigned to "tactical" nuclear weapons could be performed by precision-delivered weapons with a conventional warhead. In principle this could mean that military planners would be more willing to dispense with the use of nuclear weapons in a limited conflict, but in practice it could equally well have the effect of blurring the distinction between the use of nuclear and non-nuclear weapons, thus enhancing the risk that an armed conflict develops into nuclear war.

A range of new weapons and munitions based on blast, fragmentation and incendiary effects has been developed, and was used, notably during the Indo-China war, for saturation bombing over large areas. Such carpet-bombing techniques approach nuclear weapons as regards the blind, indiscriminate destruction they cause, the long-term ecological effects to which they give rise, and the high proportion of wounded and maimed among casualties. Other weapons of massive and indiscriminate destruction have not lagged behind. The effectiveness of incendiary weapons has been considerably increased, and the development of binary nerve gases and their munitions (which are relatively innocuous to handle as the nerve gas is only assembled in flight) could seriously weaken the remaining technical and operational constraints on the deployment of chemical weapons.

Significant developments have also taken place in a number of other fields such as radar technology, anti-submarine warfare techniques, low-altitude interceptor aircraft, laser-guided cannon and many more.

This rapid technological change originates in a few countries, but it readily spreads to the rest of the world through the transfer of arms, whether in the form of grants or of trade. The rate of innovation and obsolescence in weaponry which is determined by the R and D efforts of the leading countries thus imposes itself on other countries, even though there may be time-lags, depending on the weapons and countries involved. This tendency for the rate of innovation of the leading countries to be transmitted to other countries and regions is already implied by the fact that it is overwhelmingly the technologically leading countries which are the big arms exporters. The six main military spenders, who together account for virtually all military R and D outlays,¹⁷ account for over 90 per cent of all military exports¹⁸ and for 95 per cent of the exports of major weapons to developing countries.¹⁹ In areas such as the Middle East where the latest developments in conventional weaponry have, particularly in recent years, appeared with little or no time-lag, this process is particularly clear.

The qualitative character of the arms race at its centre is thus one of the principal forces behind the accelerating horizontal proliferation of "conventional" weaponry. In addition to the constant pressure on importing countries to modernise their stocks of weapons and equipment, the qualitative character of the arms race gives rise to various pressures in the main producing countries to raise exports, including the need to dispose of obsolete inventories, to achieve large-scale economies, and to lengthen production runs in order to lower unit costs and finance further research and development efforts.

The total value of transfers of military goods and services cannot be determined with accuracy, although several institutions now publish counts and estimates of arms transfers on a regular basis.²⁰ The United States Arms Control and Disarmament Agency, which gives the most comprehensive figures, estimates the total value of goods actually delivered in 1975 at \$9.7 billion in current prices.²¹ This excludes training, services and construction which, if figures for the United States are a valid guide, would add another 30 per cent to the total, raising the figure for the value of military goods and services transferred worldwide in 1975 to an estimated \$13 billion.²²

About one third of the total is traded among industrialised countries; another third, approximately, is made up of exports to oil's exporting developing countries, mainly in the Middle East, and the remaining third goes to all other developing countries together.²³ The total value of arms transfers has been growing steadily over the years, increasing by 3 to 4 per cent over the past decade if the exceptionally large transfers of 1972 and 1973, mostly related to the wars in Indo-China and the Middle East, are disregarded.

Despite this appearance of continuity, very important changes in the pattern of arms transfers have in fact taken place in this period. First, there has been a rapid rise in the export of major weapons to a number of developing countries and in some cases these are increasingly highly sophisticated weapons. According to SIPRI estimates, exports of major weapons to developing countries rose from \$3 billion in 1970 to \$6.3 billion in 1975 and \$7.3 billion in 1976.²⁴ Second, there has been a major shift towards transactions on commercial or near-commercial terms. This increasingly commercial character of the market is closely related to a number of other features of the flow of arms in the mid-1970s which contrast markedly with those of arms transfers in the 1960s. While the flow of second-hand and surplus equipment remains important, an increasing part of the arms trade involves the latest models. In some cases export orders have even taken precedence over supplies to the armed forces of the exporting country itself. At the same time, the tendency for each recipient country to have to rely on a single supplier is becoming less pronounced. Prospective buyers are now often the object of active sales efforts by a number of potential suppliers. Again, the commercial character of the market finds expression in the fact that arms transfers are not almost exclusively a function of the pattern, of alliances and alignments as they mostly were in the 1960s and earlier. Many countries are now acquiring weapons from

other than traditional suppliers and on the basis of what they feel they need for their own purposes. While the supply of arms obviously remains one of the principal means of gaining influence or of keeping out rival political influence, the diplomatic leverage involved in arms transfers is apparently diminishing.

These developments in the direction of greater emphasis on up-to-date equipment, greater military and political autonomy for the recipients vis-a-vis suppliers in a number of cases and more intense competition among the latter could have far-reaching political and military consequences. They have led to growing concern and to efforts to find means of regulating this aspect of the arms race. Particularly in recent years, when some specific deals have attracted such public attention, arms transfers have been a very visible part of the arms race. Nevertheless, it must be borne in mind that arms transfers are only one part of the over-all process of arms acquisition. At about \$13 billion annually, arms transfers account for 3 to 4 per cent of world military expenditures, or, it may be assumed, for somewhere between 10 and 15 per cent of the military equipment produced throughout the world. It follows that rapid expansion in armaments is, with a few notable exceptions, overwhelmingly concentrated in the main arms producing countries, in other words in arms exporting rather than in arms importing countries.

Given that the possession of arms cannot remain the prerogative of a few countries, the realistic alternatives to trade in arms, if the arms race between the main Powers is allowed to go on, are not necessarily preferable to it: arms grants tend to foster relationships of dependence, while domestic arms production is in most cases more costly and could give rise to patterns of dependence between countries and to vested interests within them which are stronger and more lasting than those resulting from arms transfers on commercial terms. Because arms transfers are only a very small part of the total process of arms acquisition, it is not an aspect of the arms race which lends itself to broad and general restraining measures unless such measures are coordinated with general progress towards disarmament, involving the arms producing countries as well. Even so, there is urgent need to consider measures aimed at specific regions or weapons systems to avoid encouraging international conflict and to pre-empt costly and pointless local arms races, but without jeopardizing the security of states. There is scope for the exercise of a maximum of self-restraint by countries individually, and reciprocally, for collective arrangements

on a regional basis²⁵ or for multilateral negotiations to link regional regulations on types or levels of armaments with measures of disengagement by outside powers,²⁶ and in some cases for collective action by the international community to deny arms supplies to particular countries.²⁷

The strong qualitative momentum of the current arms race has a number of important consequences for the way it develops, the insecurity it generates and in terms of the possibilities for disarmament. In an arms race where the emphasis is on quantity, where technological development is slow and of little consequence, countries may be expected to match their armament efforts to the stocks or the growth rates of the military forces of their opponents. There is room for saturation levels or for mutually agreed ceilings and reductions. Under conditions of rapid military innovation, on the other hand, the decisive factor in the military procurement plans of countries at the forefront of the technological arms race is not so much the actual military strength of their opponents but rather those technological advances which opponents might be able to achieve over the next decade or so (10 years being the typical gestation period for a major technological advance). Inevitably, as the apprehensions of military planners shift from the force levels towards the R and D efforts of their opponents, it is increasingly on the R and D efforts of their own country, which are known, that they will have to base their plans.

In an arms race where the stress is on technological advances the process of weapon and counter-weapon development therefore tends to become in some measure an *intra-national* process, in some cases, only marginally related to the stages actually reached by other countries.²⁸ Each country is actively seeking means of defeating its own most advanced weapons and of neutralising its own most recent defences, thus conferring on the development of military technology a momentum and a rate of obsolescence much greater than in comparable civilian applications. A qualitative arms race with its long lead time and its emphasis on future possibilities rather than current realities tends to move in one direction only: one country's advances in weaponry will be emulated by others, but its self-restraint need not be. Similarly an increase in international tension may accelerate the arms race, but an improvement of the international climate will not necessarily suffice to slow it down.

In advanced military technology, the achievement of exacting technical specifications and early delivery schedules tend to take

precedence over cost considerations when new weapons are being designed. The large cost-overruns which have become an almost normal feature of advanced military projects illustrate this fact. The result is an increasing volume of research and development with each new generation of weapons. For example it is estimated that the number of draftsmen required for the design of a military aircraft today is typically of the order of 4,000 man-years, spread over a 7- to 10-year period. This may be compared with about 170 man-years, spread over 2 to 3 years, required for the design of the Halifax bomber on the eve of the Second World War.²⁹ For many years now rising R and D requirements have had to be met by expanding the staff rather than lengthening the design cycle, if weapons were not to be already obsolete when they entered into service. This trend towards rapid development and design by means of ever larger teams of engineers, scientists and technicians which is inherent in a qualitative arms race cannot fail to create problems of surplus capacity both in design and in production unless military procurement expands for every new generation of weapons.³⁰

Continuous employment is only compatible with rapid development and design if production cycles are short and military stocks are replaced at a rapid rate. The abandonment of many advanced weapons programmes before production started but after hundred of millions of dollars had been spent on development, again a recurrent feature of the past decades, has of course helped to alleviate somewhat this problem of surplus capacity. Even disregarding the inherently wasteful character of weapons themselves, arms production under the conditions of a qualitative arms race appears as an exceptionally wasteful process, whatever the form in which the waste appears: as project cancellations half-way through, as intermittent underemployment or as military arsenals which are allowed to expand for industrial rather than military reasons.

The forces behind an ever-expanding arms race and the intense development and exploitation of technology for military purposes cannot be accounted for simply in terms of action-reaction processes, of the apprehension raised in each country by the military programmes of others. As the arms race expands in the direction of ever-greater reliance on advanced technology and draws into its orbit ever new sectors of society, a number of new mechanisms set in which tend to perpetuate the race if not to accelerate it. The sheer logic of technological innovation, the fact that one cannot apparently afford to leave any avenue unexplored, the industrial imperative and other implications of long

lead times have already been mentioned. A number of other factors have been proposed to explain the blind momentum and the vast scale which characterise the present arms race. In addition to a variety of more or less explicit political and military motivations applicable to individual cases, a number of domestic factors may be involved. Their importance obviously depends on the precise circumstances. In some instances, the armed forces have been expanding mainly in response to internal strains and have served to uphold the social order in the face of mounting opposition or of profound divisions in society. Another factor is the inertia inherent in institutions once established and consolidated and in the coalitions of interest which may develop between the armed forces, industry, sectors of the scientific and technological professions and political and administrative apparatuses. Some studies of specific decisions on military procurement have emphasised the important roles played by compromise arrangements between different institutional and bureaucratic pressures, on the one hand, and by inter-service rivalries, on the other.

A thorough understanding of these several processes which sustain the arms race and determine its orientation is, of course, an essential prerequisite if political action is to turn the tide. Each of them directly points to forces that may impede progress towards disarmament. So far these different processes are, however, on the whole poorly understood. One important reason is that the same factors and combinations of factors are not at work everywhere. There are evidently great differences between the countries at the technological forefront of the arms race and the countries which are gradually being drawn along, between countries with different socio-economic systems, and so forth. Despite this, studies have had to be confined almost entirely to those countries, the United States and some European countries in particular, for which sufficient information has been available. But, if effective progress towards disarmament is to be achieved it will clearly be insufficient to regard the arms race merely as an action-reaction phenomenon, and disarmament as simply a question of political will at the highest decision-making levels. The arms race is not only becoming more dangerous; it is also becoming more complex and more firmly entrenched. It is sustained by a variety of forces acting together, and it must be expected that to remove one of them is not sufficient to reverse its course. In fact, it may be assumed that it is not one or a few single factors but precisely their multiplicity which confers upon the arms race its great inertia and which has rendered it so intractable from the point of view of disarmament, any limited successes in one field tending

to be offset very quickly by developments in other sectors of the arms race. A point to be specially stressed is that in an arms race so consistently bent on qualitative improvements and the quest for achieving or preempting technological breakthroughs, a mere inspection of trends in military expenditure gives a wrong impression of the true rise in destructive potential. In civilian production it is a well-known proposition that under conditions-of continuous technical progress even a policy of zero net-investment will lead to a constantly increasing output. Worn-out machines are replaced by machines incorporating a more advanced technology and this results in higher productivity. The same applies to military expenditure. Even if it does *not* rise in real terms, the devotion of a large proportion to R and D and to qualitative improvement means that the destructiveness and the potential danger of the military apparatus continues to grow.³¹

A corollary springing from the observations in the foregoing paragraph is that it is necessary to distinguish between the economic and the military consequences of armaments expenditure. They bear no necessary relationship to one another: a rise in the (real) volume of military expenditure will almost always imply an increase in lethality and destructive power. But, when such expenditure is reduced there may well be a divergent movement: a certain relaxation of the over-all economic burden can be accompanied by a further extension of destructive power, as indeed we are witnessing today in some countries. Since, however, the concentration on the qualitative (i.e. technological) arms race requires a high input of specially scarce qualified manpower (scientists, technicians, management, highly-skilled workers), shifts towards greater emphasis on rapid qualitative change can be economically harmful, even when they are accompanied by a reduction in total (real) military expenditure.

The facts about the qualitative character of the arms race —alarming and growing in importance—have to be kept in mind when measures against a continuation of the arms race are discussed. It will not suffice to take cuts in total military expenditure as the sole criterion of progress³² unless they are very substantial indeed. Supporting measures to contain the qualitative arms race are imperative.

One form of progress consists in setting limits on special weapons and weapon systems. The ABM Agreement between the United States and the USSR or the Biological Disarmament Convention are cases in point. Similar steps over wider ranges of weapons and modes of warfare, nuclear and chemical means of warfare in particular, would help to

erect important boundaries for the arms race. To be most effective these measures should be directed at new developments, that is before any significant R and D work has been done and before the projects acquire a political, institutional and industrial momentum. Provided this does not detract from the primary task of constraining and reversing the nuclear arms race and of abolishing existing weapons, there is also a case for seeking prohibitions of the development and manufacture of new types and systems of weapons of mass destruction, as called for in several resolutions of the General Assembly.³³ The banning of new weapons and systems of mass destruction must be closely linked to firm measures for the cessation of nuclear weapons production, the liquidation of the existing stockpiles and the complete and definitive prohibition of nuclear weapons. A decisive attack on the qualitative arms race would also be achieved if an agreement could be reached among the leading military powers to cut down expenditure on military R and D.³⁴ Such a measure could also—after redirecting the released resources—lead to important economic and social benefits to both the developed and developing nations.³⁵

The commitment to incessant qualitative change is deeply embedded in the inner logic of the arms race. Agreements on qualitative and technological restrictions are not easily reached, not least because of difficult verification problems. But, if the difficulties of securing some measure of control over this dimension of the arms race are particularly great, so too is the urgency of the need to take determined steps in this direction. Each passing year sees the initiation of a spate of new weapons, and existing programmes become more deeply entrenched in the military and political systems of countries and thus more difficult to stop.

In the light of the developments described above, it is necessary to expound openly the dangers of the continuation of the arms race, and to dispel illusions that lasting peace and security can coexist with huge accumulations of means of destruction. The adoption and implementation of resolute measures in the field of disarmament and particularly nuclear disarmament, ultimately leading to general and complete disarmament, has become imperative. At the same time it is necessary to intensify efforts for the adoption of partial measures of military disengagement and disarmament that can contribute to the achievement of that goal.

REFERENCES

1. The United States of America, the Union of Soviet Socialist Republics, China, France, the United Kingdom of Great Britain and Northern Ireland and the Federal Republic of Germany.

2. It is to be noted, however, that the installation of nuclear weapons or any other kinds of weapons of mass destruction in space is prohibited under the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (General Assembly resolution 2222 (XXI)).
3. Reference here and elsewhere to the “six main military spenders”—a categorisation which is relevant in terms of the main subject of this report—should not be allowed to conceal the very large differences within this group. Not all of these countries are leading in the process of arms innovation or in the production and export of arms; military expenditure (even more so military expenditure *per capita*) differs widely within this group of countries; and not all of them have military capabilities that give them a global military-strategic importance.
4. *The Defense Monitor*, vol. 3, No. 7, August 1974 (Centre for Defense Information, Washington).
5. *SIPRI Yearbook of World Armaments and Disarmaments*, 1976, pp. 24-25.
6. Ruth Sivard, *World Military and Social Expenditures*, 1976, pp. 10-11.
7. *SIPRI: Disarmament or destruction*, 1975, p. 11.
8. *The Military Balance*, published annually by the International Institute of Strategic Studies. Ruth Sivard, in *World Military and Social Expenditures*, 1977, cites the following world totals: Tanks; 124,000; combat ships: 12,400; combat aircraft: 35,000.
9. Ronald Huisken, “Naval Forces”, *Ocean Yearbook*, University of Chicago Press, October 1977.
10. *SIPRI Yearbook of World Armaments and Disarmaments*, 1976.
11. *The Defense Monitor*, vol. 3, No. 7, August 1974, *SIPRI: Offensive Missiles*, Stockholm Paper 5, 1974, p. 26 and recent editions of *SIPRI Yearbook of World Armaments and Disarmament* and of IISS; *The Military Balance*,
12. In line with this the appearance of studies tending to belittle the effects of nuclear war and to make it more thinkable must cause concern. See, for example, *Worldwide Effects of Nuclear War, Some Perspectives*, United States Arms Control and Disarmament Agency.
13. *The Defense Monitor*, vol. 4, No. 5, July 1975.
14. The direct costs of the explosion, mainly the plutonium and the preparation of the test-site, were officially estimated to have been less than \$0.5 million.
15. It should be noted, however, that successive Governments in India have repeatedly announced their intention not to use nuclear energy for other than peaceful purposes.
16. *SIPRI Yearbook of World Armaments and Disarmament*, 1976, p. 32.
17. 96-97 per cent of the world total for the 1960s according to SIPRI estimates (*SIPRI: Resources Devoted to Military Research and Development*, 1972, p. 10).

18. *Arms Control Report*, United States Arms Control and Disarmament Agency, Washington, D.C., July 1976, p. 46.
19. *SIPRI Yearbook of World Armaments and Disarmaments, 1976*, pp. 252-253.
20. There are considerable differences between the various publications as regards items included, sources of information and methods used for estimating values. Figures published by the United States Arms Control and Disarmament Agency (ACDA) are meant to include all transfers of weapons and ammunition, support equipment and spare parts. Those published by the Stockholm International Peace Research Institute (SIPRI) refer only to "major weapons", meaning aircraft, ships, missiles and armoured vehicles, and aggregate figures are given only for transfers to developing countries. The International Institute of Strategic Studies (IISS) also publishes lists of arms transfers, but mostly does not indicate prices or estimate values.
21. *World Military Expenditures and Arms Transfers, 1966-1975*, United States Arms Control and Disarmament Agency, Washington, D.C., December 1976, p. 56.
22. Excluded from this estimate is transfer for military consumption of goods such as food-stuffs, petrol and medical equipment which have alternative civilian uses. During the period 1960-1975, training, services and construction accounted for 24 per cent of United States military exports (*ibid.*, p. 3).
23. *Arms Control Report*, United States Arms Control and Disarmament Agency, Washington, D.C., July 1976, p. 47.
24. All in 1975 prices. *SIPRI Yearbook of World Armaments and Disarmament, 1977*, pp. 306-307.
25. Such as the effort of a number of Latin American countries in accordance with the Declaration of Ayacucho (see p. 68, foot-note 98).
26. Nuclear free zones are one example of this. Negotiations on Mutual and Balanced Force Reductions in Europe and proposals regarding the Indian Ocean are other examples.
27. For instance, resolution 191 (1964) of 18 June 1964 in which the Security Council reaffirmed its call upon all States "to cease forthwith the sale and shipment to South Africa of arms, ammunition of all types, military vehicles, and equipment and materials for the manufacture and maintenance of arms and ammunition in South Africa."
28. For an illustration of this, see G. T. Allison, "Questions about the Arms Race. Who's Racing Whom? The Case of MIRV" in *European Security, Disarmament and Other Problems*, Proceedings of the Twenty-third Pugwash Conference on Science and World Affairs (Aulanko, Finland, 1973), pp. 194 ff.
29. M. Kaldor, *European Defence Industries—National and International Implications*, Monographs of the Institute for the Study of International Organisation, University of Sussex, p. 9.
30. Kaldor, *op. cit.*, pp. 7-14.

31. This point is succinctly stressed by Prof. J. Ruina in his essay on "The Arms Race and SALT" (in D. Carlton (ed.); *The Dynamic, of the Arms Race*, Groom Helm, London, 1975, p. 52: "Without limits on modernisation and replacement an enormous race is possible, since one can take everything one has and replace it, and keep doing that again and again, thereby improving what one has."
32. *Reduction of the military budgets of States permanent members of the Security Council by 10 per cent and utilisation of part of the funds thus saved to provide assistance to developing countries*, A/9770/ Rev.1 (United Nations publication, Sales No. E.75.I.10), p. 9.
33. Resolutions 3479 (XXX) of 11 December 1975 and 31/74 of 10 December 1976. The view was expressed in the Conference of the Committee on Disarmament that new types of weapons of mass destruction would include any types of weapons based on qualitatively new principles of operation, whether with respect to the method of use, targets, or the nature of their effect. As to new systems of weapons of mass destruction, it was said that they should not be established either for new types of weapons or for types of weapons which are based on scientific principles already applied but to which new technological elements of military equipment or means of delivery could give an even more dangerous character.
34. This proposal is included 'as one of several possible options in *Reduction of the military budgets of States....* para. 33.
35. *Disarmament and Development* (United Nations publication, Sales No, E. 73.IX.1), para 43 and annex III, where examples are given for peaceful uses of military R and D.

29

THE ARMS RACE IN TERMS OF RESOURCES

The massive diversion of resources to military ends described in the 1971 report has continued unabated. The global waste of financial resources, manpower, raw materials, technical skills and research and development capability has gone on year after year at about the level it reached in 1968. From that angle little has changed since the 1971 report. What is fundamentally new in evaluating the situation in the perspective of the latter half of the 1970s is the changed frame of reference. Compared even with the situation at the beginning of this decade there is, today, a much greater awareness that the world is facing a range of urgent problems of decisive importance for the progress of all States. Their solution will make heavy demands on the mobilisation of energies and resources in all countries and will require an approach based on co-operation, international solidarity and concern for the common interest, both of which are incompatible in the most glaring way with the perpetuation of the arms race on anything like the present scale.

Chief among these problems, in fact a label encompassing many of them, is the problem of development and the associated task of establishing a new international economic order. The arms race with its economic costs and social and political effects, nationally and internationally, constitutes an important obstacle to effective progress in this respect. Exacerbated by the population explosion, the food crisis and the devastations of natural disasters and war, the problems of eradicating poverty and of improving standards of health, nutrition, education and housing have reached a stage of crisis in many parts of the world. No less important problems are those of industrialisation and growth in developing countries, of combating the degradation of the environment, of developing new sources of energy and raw materials while preserving presently available sources, of halting the degradation

of cities and many others. All of these make claims on investment, research and other resources in direct competition with military claims.

The crisis which has hit the international monetary system, and the economic recession and run-away inflation that have beset many countries, both among the poorest and among the wealthiest, have added to the urgency of many of these problems. With *per capita* growth slowing down in many parts of the world and with uncertain prospects for the near future and for the longer term, economic and social problems have become exacerbated in many countries. Perceptions and perspectives have also altered in many countries. Attention has been drawn both to the difficulties of achieving continued economic expansion and to the problems in terms of damage to the environment and depletion of natural resources to which it can give rise. Resources now being absorbed by the arms race are scarce and needed for socially constructive ends.¹

World military expenditure, it was noted in chapter I, has now stood for a number of years at about \$350 billion per year in today's prices. The gigantic costs of this arms race and the perverted priorities of the world at this juncture, more than halfway through the Disarmament Decade and the Second United Nations Development Decade, are perhaps best illustrated by the fact that every year military activities throughout the world absorb a volume of resources equivalent to about two thirds of the aggregate gross national product of those countries which together comprise the poorest half the world's population.

Since the Second World War none of the major military powers have been at war with one another, but world military expenditure has been rising steadily. Over the past half century it has increased in real terms by a factor of 10, corresponding to an annual increase of nearly 5 per cent. Since the Second World War the direct costs of the arms race have exceeded \$6,000 billion (in 1975 prices) or about as much as the aggregate GNP of the entire world in 1975.

The rapid rise in military expenditure during the 1960s followed by a levelling off over the past eight years repeats a pattern, which has been encountered several times before. Periods of massive military expansion, mostly in connexion with war (the Second World War, Korea, Vietnam) have alternated with plateaux lasting for some years. The resulting impression that there are certain periods of relative stability is largely an illusion. In fact, the underlying trend for the great majority of countries is one of long-term irregular rise in military budgets,

punctuated occasionally by modest and temporary decline. It is merely the overwhelming weight of a few leading countries in the total which gives the appearance of stepwise growth to the aggregate. A closer analysis of the military expenditures of individual countries in the 1970s does not suggest that this general upward trend has ceased.

With world military expenditure remaining relatively stable in real terms since 1968 and world output continuing to grow, even if only very slowly by the middle of the 1970s, there has been, of course, a favourable trend in the ratio of military to various non-military areas of expenditure. Public expenditure on education, for example, overtook military expenditure in 1973. But, this is a world average and there are very large differences between countries. In the world as a whole there are almost as many soldiers as there are teachers.²

As with education, public expenditures for health services have expanded rapidly in recent years. Nevertheless, public health expenditures (to which privately-financed medical care should be added to complete the picture) only amount to about 60 per cent of military expenditure on a world basis. Again differences between countries are very large. Even greater imbalances exist in the critical field of research funding. The resources devoted to medical research world-wide are only one fifth of those devoted to military research and development. In all cases the resources consumed in the military sector are very large compared with the social expenditures of Governments, even in such important fields as education and health, indicating the unfortunate priorities that govern the allocation of public funds throughout the world.

Such comparisons of gross expenditure for wholly incommensurate ends are, however, relatively meaningless as they stand. They give only a crude indication of the sacrifices in terms of social and economic progress that the arms race entails. A more adequate assessment would require a survey of the needs for increased resources for social and other non-military purposes, and a comparison of the costs of meeting those needs with the costs of military programmes. While no such systematic survey can be conducted here, a few examples will indicate the magnitude of the needs and will show that even a small proportion of the resources now wasted on military pursuits could go a long way towards alleviating some of them.

The most alarming situation of all is in the area of nutrition. Half a billion people throughout the world are severely malnourished and millions more subsist on diets that are far below minimal needs. A

large proportion of young children in developing countries are blocked in the physical and mental development because of diet deficiencies which entails incalculable consequences for the next generation. In recent years famine has struck entire regions of the world, and on a *per capita* basis food production in the developing countries as a whole has been declining. Yet the poorest countries, those with *per capita* incomes below \$200, generally countries whose military expenditures are modest in relation to GNP, nevertheless spend (on average) about as much for military activities as they spend on agricultural investment.³ To complement national programmes, there is a desperate need for international assistance to finance increased food production and for establishing emergency reserves. At the World Food Conference, in 1974, it was estimated that development assistance to agriculture needed to be stepped up to \$5 to 6 billion annually for the remainder of this decade. While fund-commitments for this purpose have risen substantially since then, they are still off the target by \$2 to 3 billion.⁴ To close this gap, funds equivalent to 1 per cent of the military budgets of industrialised countries would be sufficient.

The vast benefits which could result from even trifling cuts in military expenditures and the reallocation of the funds thus saved, are particularly obvious in the field of health. The World Health Organisation (WHO) spent around \$83 million over 10 years to eradicate smallpox in the world. That amount would not even suffice to buy a single modern strategic bomber. The WHO programme to eradicate malaria in the world, estimated at a cost of some \$450 million, is dragging on owing to lack of funds. Yet its total cost over the years is only half of what is spent every day for military purposes, and only a third of what will be spent, strictly for procurement, for each of the new "Trident" nuclear missile submarines. According to 1975 statistics, more than one billion people in 66 developing countries live in areas where malaria is endemic, adding its effects to the other privations of poverty, inadequate nutrition, insanitary water supply, poor housing, and multiple infections, causing high prevalence of disease and high mortality, not least in the young, and undermining the capacities of the people in these communities to improve their lives materially and socially.⁵

The eradication of some of the important communicable diseases and the implementation of other major programmes outlined by the WHO⁶ would cost trifling amounts compared to the cost of the arms race. Moreover, the potential benefits of a transfer of resources from the military to the health sector reach far beyond the immediate

humanitarian aspect. The implementation of such eradication programmes would by itself release important resources in the medical sector for new tasks, and, improving the general health standard in affected areas, would enhance the ability of people to improve their social and economic conditions in other respects. Such cumulative benefits are indeed a general feature of many development programmes, particularly of those which are directed towards the most destitute sectors of the population. In this respect as well expenditures for development purposes stand in stark contrast to military expenditures which are a waste in themselves, which induce other countries to similar wastage, and which undermine the potential for future growth.

It is in the field of scientific and technological capability that the diversion of resources to military ends is most massive. It is estimated that at the present time some 25 per cent of the world's scientific manpower is engaged in military-related pursuits. In the past the fraction has been even higher. Indeed, it has been estimated that of total cumulative R and D spending since the Second World War some 40 per cent has been directed at achieving military ends.⁷ By far the largest part is spent on the development of equipment which has no conceivable civilian use. Medical and biological research, research related to the protection of the environment or to the specific needs of developing countries have consumed few resources compared with military research.

As already noted, military research and development is overwhelmingly concentrated in the six main military spenders. Together they are reported to account for 96 to 97 per cent of world military R and D.⁸ As only a small percentage of the world's scientific and technical manpower is found in the developing countries, it follows that military research and development in the world absorbs perhaps 10 times the entire scientific and technological capabilities available in developing countries. Moreover, technological innovation has been very rapid in the military field. One important consequence is that as high-technology weaponry spreads from the technologically leading countries to countries where the technical and industrial base is narrower, and as these countries engage in the production of advanced weapons themselves, military requirements take an increasing toll of already scarce technical skills and equipment.

The potential benefits over the years from the redeployment of R and D resources which effective disarmament would permit are so many, differentiated, and unforeseeable that one cannot give an adequate picture of them.⁹ As regards the problems of development it is becoming

increasingly clear that in a great number of fields developing countries cannot simply import the technologies which proved adequate in the advanced industrialised countries. Problems such as energy supply, water supply and water purification, agricultural techniques and food preservation, transport and communication equipment, health and hygiene and many others require solutions and technologies specially adapted to the needs and conditions of developing countries. As regards the economic and social problems raised by development there are enormous needs, unexplored in almost every respect, waiting to be dealt with in the systematic, large-scale and purpose-oriented fashion which has so far been the almost exclusive privilege of military research. In many other fields directly related to problems now confronting the world or to foreseeable [future] problems there is the same urgent need for increased scientific and technological resources. The effective exploitation of the food and mineral resources of the oceans, the development of new sources of energy, the monitoring of environmental health hazards, meteorological research and forecasting, natural disasters warning and natural resource surveys are only a few examples of areas where skills and facilities of the types now wasted in military pursuits could readily be used. It is evident that in all these fields the civilian spin-offs from military research, if not in all cases negligible, have been trifling in comparison with the resources with which they were bought and with the results that could have been achieved if the efforts had been aimed directly at the civilian applications.

Manpower is another one of the very large drains on resources which the arms race entails.¹⁰ The armed forces around the world total approximately 22 million people. In developing countries the number of men under arms has been increasing roughly in proportion to population growth although trends in individual countries vary considerably. In the highly industrialised countries the number has declined slightly in recent years, reflecting primarily the greater sophistication of weapons systems, the rapid increase in the cost of military personnel, the growing emphasis on highly skilled manpower in the armed forces and, in some cases, the scarcity of manpower in the civilian sector. With the labour reservoir which agriculture provided for many decades largely exhausted in the economically most advanced countries, the waste of manpower for military ends may come to be increasingly felt as an intolerable burden.

The total manpower absorption by the military, direct and indirect, can only be guessed at. For the United States there is for every three

persons in the armed forces another four in military-related employment.¹¹ It is estimated that for the world as a whole, 60 million people are engaged in military-related occupations, uniformed or civilian, public or private.¹² This corresponds to the entire labour force in manufacturing in Europe outside the USSR or to 70 per cent of total employment in the United States in all branches of activity. Even though these figures are obviously not directly comparable, it is probably the case that in most countries those employed directly or indirectly by the military have a substantially higher level of technical skills than the population average and would have had higher than average productivity if they had been employed in the civilian sector. Military and military-related activities everywhere absorb a proportion of the most qualified categories of persons which is much higher than what the share of the military budget in the gross national product might lead one to expect. This is obviously true of research personnel, engineers and technicians. It is also true in the field of administrative and managerial skills. In some cases the proportion of industrial employment directly or indirectly engaged in military-related production seems to be much higher than the proportion of GNP diverted to military ends.¹³ In any case it is evident that the over-all drain on highly qualified manpower resources is often larger than either military budget figures or over-all figures for military-related employment suggest.

The protection of the environment is an important part of the resource problem. Military activities impact in several ways on the task of repairing the environmental damages of the past and preventing or minimising further degradation. One factor, perhaps in the long term the most important of all, is simply the diversion of financial and scientific resources involved in the arms race. Effective solutions to environmental problems will in many cases require large research and development efforts and considerable investments for reprocessing, for air and water purification and for many other tasks. Effective action in this field, not least where large-scale international co-operation is required, would be greatly facilitated by the abatement of the arms race and, not least, by the release of important scientific and technical resources which this would bring about. It may be assumed that peacetime military activities, defence industries', military installations, manoeuvres and the like cause environmental damage on top of that produced by civilian activities, roughly in proportion to the share of military expenditure in GNP, but the supreme mode of environmental destruction, deliberate or merely incidental, is, of course, war. Military technology has acquired or perfected means, including saturation

bombing, incendiaries, chemicals and, of course, nuclear explosives, of a nature to cause extensive and in some cases persistent environmental damage. In South Vietnam more than 100 kg of dioxin, the chemical of which 2.5 kg were accidentally released around the Italian town of Seveso in 1976, were inadvertently disseminated as an impurity in one of the widely used chemical defoliants. Concentrations in some areas reached 5 per cent of the level which has rendered areas around Seveso uninhabitable.¹⁴ This and a range of other environmental and ecological consequences of the Indo-China war are such that it is estimated that the recovery period, at best, will have to be measured in decades.¹⁵

The world's armed forces are also major consumers of a wide range of non-renewable resources, both energy and raw-material reserves, though statistical information on this is fragmentary or nonexistent. In assessing the over-all depletion of natural resources attributable to the arms race one is therefore reduced to fairly arbitrary extrapolations from figures for the United States (when these exist) or to the crude and unconvincing assumption that the military and the civilian sectors of the economy make demands on individual resources in proportion to their relative size. In any case it is clear that the consumption of raw materials for military purposes is even more concentrated in the main military powers than is resource consumption generally. For such metals as aluminum, copper, lead and zinc, military demand in the United States is 11 to 14 per cent of total demand.¹⁶ For several other metals it approaches 10 per cent. For titanium it exceeds 40 per cent.¹⁷ Extrapolating from United States figures, world military consumption of liquid hydrocarbons (excluding petroleum products used in the production of weapons and equipment) has been estimated to be about 700 to 750 million barrels annually.¹⁸ This is twice the annual consumption for the whole of Africa and corresponds to approximately 3.5 per cent of world consumption. For jet fuel on the other hand, military consumption (in peacetime) is reportedly one third of total consumption for the United States.¹⁹ Even though information is mostly lacking it is evident that the military contribution to the depletion of natural resources is substantial in many cases.

The consequences of the arms race in terms of natural resources may be illustrated by the situation as regards nuclear fuel. The latest survey of uranium resources, production and demand showed that, while there is a great expansion of prospecting and development resulting in major new discoveries, there would nevertheless be formidable problems in ensuring that there is enough uranium at competitive

prices to meet demands for the next 25 years. The report estimates that during that period it will be necessary to invest about \$20 billion in exploration and a similar sum in mining and milling.²⁰ The amount of fissile material in military arsenals is not known, but if disarmament released 2,000 tons it would be enough to provide the initial and replacement fuel over their useful life for an installed capacity of about 100,000 electrical megawatts of thermal reactors. For comparison with these figures, current estimates of the total installed capacity of nuclear power plants are 200,000 electrical megawatts in 1980 and 700,000 to 800,000 in 1990. In addition, complete nuclear disarmament would release more than 20,000 nuclear scientists and engineers, now working on military applications of nuclear energy, some of whom could assist in the peaceful nuclear programmes of developed and of developing countries.²¹

To assess in quantitative terms the total squandering of resources—human, material and financial—which the arms race entails, military expenditure is the only measure available. Adjusted to uniform prices and to uniform definitions of the military sector in so far as available information permits, it allows the consumption for military purposes of different types of resources in different countries to be added together to produce an over-all estimate of the wastage involved.²² As noted, this annual “opportunity cost” of the arms race is at the present time close to \$350 billion.²³ But, this is far from representing the full costs of the arms race. There are domestic and international, social and political costs which military expenditure figures omit altogether, not to speak of the costs of war. Even apart from this, the material resources and the human efforts absorbed by the arms race and the sacrifice of other opportunities this entails, is only very imperfectly measured by the budget allocations on which global military expenditure figures are mostly based.

In several respects the over-all features of the arms race in the first half of the 1970s, as reflected in military expenditure figures, have been rather different from those of the preceding decade. The 1960s, as shown in the previous report, were characterised by a massive increase in the amounts spent on armaments, even if this rise did not quite keep up with the growth in world GNP for the decade as a whole. From a total of about \$150 billion annually (in 1973 prices) throughout most of the 1950s, world military expenditure rose to a peak of almost \$260 billion in 1968. This increase was massively led by the six main military spenders. For the decade as a whole, they alone accounted for

80 to 85 per cent of world military expenditure and together they devoted a significantly larger share of their combined GNP to armaments than did most other countries.

In the 1970s, this pattern changed in several respects: while stocks of arms continued to rise, world military expenditure remained relatively constant for nearly a decade, close (in constant 1973 dollars) to the figure \$250 to 260 billion reached in 1968.²⁴ For the last two to three years military expenditures have been rising again in real terms, though at a less rapid rate than in the 1960s. As world output continued to rise, rapidly through the early 1970s and more slowly after that, the share of world output allocated to military purposes diminished. From 6 to 7 per cent in the 1960s that percentage is now down to 5 to 6 per cent. That decrease in the share of output devoted to armaments has been most marked in the group of main military spenders. As a result, their share of world military expenditure has been declining steadily from 84 per cent in 1960 to 73 per cent in 1975, the remainder being about equally shared between the other industrialised countries, on the one hand, and the developing countries, on the other (table 1).

TABLE 1
Military Expenditures, Selected Groups of Countries. 1960-1975^a
(Billions of Constant 1973 Dollars and Per Cent of World Total)

	1960		1965		1970		1975	
	Billion\$	per cent						
Six main military spenders	133.5	84.4	164.1	82.5	205.9	81.0	194.7	72.6
Other industrialised countries	17.3	10.9	23.3	11.7	31.3	12.3	39.8	14.8
Developing countries ^b	(7.2)	(4.6)	11.5	(5.8)	17.0	6.7	33.8	12.6
World Total	158.1	100	198.8	100	254.1	100	268.2	100

^a **Source:** SIPRI Yearbook of World Armaments and Disarmament, 1977, appendix 7A.

^b *Figures for developing* are not strictly comparable from year to year as the number of countries has increased throughout the period. In addition the figure for 1960 is based on incomplete data.

Thus, the tendency for military expenditures to have risen only moderately in real terms since 1968 is true only of the aggregate. In fact it results almost entirely from two factors: in the United States there has been a decline in military expenditure from the level reached

at the height of the war in Indo-China, although the most recent budgets have reinstated an upward trend. In the Soviet Union, military expenditure, according to the budget figures, remained relatively constant. So large do these two countries loom in the total that it blurs the fact that the military expenditure." in most other countries have been rising as fast in the 1970s as they did in the 1960s.

Military expenditures in some developing countries have been rising fast. For this group as a whole they doubled in constant prices over five years, rising from \$17.0 billion in 1970 to \$33.8 billion in 1975 (table 1). Also, in proportion to GNP the rise has been fast. But, caution is in order when interpreting such trends. Military forces are in most cases being built up from a very low level and, with a few notable exceptions, they are still very small. Average figures for the developing countries are thus heavily influenced by high levels of spending in a few conflict-ridden and war-prone areas. In the regions with the lowest *per capita* incomes, South Asia and mid-Africa, military expenditures are in the region of \$5 *per capita*. This is only 1 to 2 *per cent* of what the highly industrialised countries spend per head of population. Even when such regions of intense militarisation as the Middle East are included in the total, the developing countries with almost 50 per cent of the world's population still account for only 12 to 13 per cent of its military expenditure. In the over-all context the developing countries are marginal. Evidently, the principal engine of the arms race is not located here, nor are the main problems of disarmament or of resource wastage. But, however small in the global context, arms budgets of developing countries loom larger and larger in relation to their limited resources and in relation to their urgent social and economic needs.

The more moderate growth of world military expenditure in the 1970s as compared with the 1960s should not be interpreted as indicating that the arms race has been less intense. As shown in chapter I the arms race between the leading military powers is predominantly of a qualitative nature, its intensity being measured less by the rate of growth of over-all military expenditure than by the volume of R and D spending and the rate at which new weapons systems are introduced. Rates of increase of military expenditure in other countries have shown no sign of abating (table 2). In the last few years world military expenditure has been rising again at an alarming rate. Short of decisive progress in the field of disarmament, particularly in reducing the military budgets of the main military spenders, the world faces the ominous prospect that the Disarmament Decade may close with a rise in world arms expenditure almost as rapid as that which occurred in the 1960s.

The decline in the proportion of world output devoted to military ends which has taken place since the late 1960s is a positive development, marking as it does a shift in the over-all allocation of resources towards somewhat greater emphasis on socially constructive ends. But, judging by the figures for the latest years, the share of output wasted on armaments is rising again for the world as a whole and for a majority of countries. This reflects the slower rate of growth of world output in recent years and the continued rise of military expenditure in most countries. Moreover, there has not been, of course, any long-term redeployment of resources away from the military at all. The long-term transfer has been entirely the other way: *from* the civilian economy where growth is generated, *to* the military sector which has appropriated a substantial part of that growth, increasing in absolute terms (and in constant 1973 prices) by almost 80 per cent from \$150 to 160 billion in 1960 to \$270 to 280 billion in 1977.

TABLE 2
Rates of Growth of Military Expenditure, 1960-1975^a
(Percentage Average Annual Increase of Real Expenditure)

	1960-65	1965-70	1970-75
Six main military spenders	4.2	4.6	-0.1
Other industrialised countries	6.1	6.1	4.9
Developing countries	—	8.1	14.7
World total	4.7	5.0	1.1

^a Derived from the figures in table 1.

REFERENCES

1. Under the conditions of cession which now apply to a number of countries it is not, of course, self-evident that resources now spent for military purposes would otherwise be productively employed in the civilian sector. The mechanisms through which the economic effects of large resources consumption in the military sector make themselves felt are different under conditions of recession from what they are under conditions of full resources utilisation, but they are no less damaging, economically and socially. Consideration of this question is postponed to the next chapter.
2. Ruth Sivard, *World Military and Social Expenditures, 1977*, p. 21.
3. In these countries less than \$5 billion annually is invested in agriculture (on average 3 per cent of their GNP and 18 per cent of their total investment programme). Robert S. McNamara, Manila Address, 4 October 1976.
4. Communications from the Food and Agriculture Organisation of the United Nations and from the World Food Council (sec A/32/88/Add.1).

5. Communication from the World Health Organisation (see A/32/88/ Add.1).
6. See the Sixth General Programme of Work of the WHO, adopted by the 29th World Assembly in 1976 and covering the period 1978-1983 inclusive.
7. SIPRI: *Arms uncontrolled*.
8. SIPRI: *Resources Devoted to Military Research and Development*, 1972, p. 10.
9. A list of some possible peaceful uses of research and *development* resources now devoted to military ends is contained in annex III of *Disarmament and Development: Report of the Group of Experts on the Economic and Social Consequences of Disarmament*, United Nations publication, Sales No. E.73.IX.1. See also *World Plan of Action for the Application of Science and Technology to Development*, United Nations publication, Sales No. E.71.II.A.18.
10. This reasoning is only fully valid under conditions of full employment. The modifications required when this is not the case are considered in chap. III.
11. Derived from tables 4 and 5 in the reply by the United States of America to the Secretary-General's note verbale (see A/32/88/Add.1).
12. Ruth Sivard, *World Military and Social Expenditures*, 1976, p. 9.
13. In Italy where the military budget is around 3 per cent of GNP, 7 to 9 per cent of the total labour force is directly engaged in filling orders from the Defence Ministry, a figure that does not even include employment in supporting Industries. See reply by Italy to the Secretary-General's note verbale (see A/32/88/Add.1).
14. Figures from SIPRI *Yearbook of World Armaments and Disarmament*, 1977, pp. 86-99.
15. See SIPRI: *Ecological Consequences of the Second Indo-China War*, 1975.
16. S.P. Dresch, *Disarmament: Economic Consequences and Development Potential* (Yale University and National Bureau of Economic Research, New Haven, Connecticut, December 1972). See also *Disarmament and Development*, appendix II.
17. Twenty-first Annual Report of the Activities of the Joint Committee on Defense Production, Congress of the United States, Washington, D.C., 21 February 1972, p. 16.
18. Ronald H. Huisken, "The Consumption of Raw Materials for Military Purposes", *Ambio*, vol. 4, No. 5-6, p. 231.
19. Ruth Sivard, *World Military and Social Expenditures* 1977, p. 13.
20. International Atomic Energy Agency and Nuclear Energy Agency of the Organisation for Economic Co-operation and Development, 1975, See communication from the International Atomic Energy Agency (see A/32/88/Add.1).
21. Communication from the International Atomic Energy Agency (see A/32/88/Add.1). 8 *Ibid*.
22. There are considerable difficulties in devising meaningful yet operative and internationally comparable definitions of military expenditure, in converting national currency figures into a common currency, and in deciding

- how to correct for price changes in the civilian and the military sectors of the economy, respectively. During the last several years, important efforts have been made within the United Nations to improve comparability in these respects and to better understand and measure the consequences of the arms race in terms of resources. See *Reduction of the military budgets of States permanent members of the Security Council by 10 per cent and utilisation of part of the funds thus saved to provide assistance to developing countries, A/9770/Rev.1* (United Nations publication, Sales No. E.75.I.10), and *Measurement and International Reporting of Military Expenditures (A/31/222)*.
23. Estimates of world military expenditure come mainly from the United States Arms Control and Disarmament Agency (ACDA) and the Stockholm International Peace Research Institute (SIPRI). The figures supplied by these two sources differ considerably in some cases, but not enough to affect conclusions substantially. ACDA figures are generally higher. Thus, the ACDA estimate of world military expenditure for 1975 is \$371 billion, 18 per cent higher than SIPRI's estimate of \$314 billion. To ensure comparability between chapters and sections we have chosen to use SIPRI figures throughout this report. Anyway, the margin of error in the figures is probably larger than the differences between figures from different sources. The data on which they base themselves are uneven in quality and some are quite uncertain. For world military expenditure, figures 10 per cent higher or lower than those given would still be plausible. In the trend figures given subsequently, the margin of error is generally much smaller, since this is mostly a question of consistency in definitions. Over long time-spans the use of other, equally plausible coefficients to correct for price changes could, of course, have a noticeable effect.
 24. Or 350 billion in current dollars. United States Arms Control and Disarmament Agency (ACDA) figures for recent years are \$10 to 15 billion higher than those given here and imply a slow but continuous increase in real terms from 1968 on (Arms Control Report, U.S. Arms Control and Disarmament Agency, July 1976). Earlier United States Arms Control and Disarmament Agency figures showing a noticeable decline for the world as a whole from 1968 to 1971 and which were reproduced in the former United Nations report on *Economic and Social Consequences of the Arms Race and of Military Expenditures* have since been revised upwards.

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THE ARMS RACE AND ECONOMIC AND SOCIAL DEVELOPMENT

The drain on resources involved in the arms race has already been commented upon in global terms. On average, countries are devoting 5 to 6 per cent of their output to military ends. This gives an indication of what is denied other avenues of public and private expenditure. One aspect of the economic and social impact of the arms race is the constraining effect on consumption, private and public, and on growth. The considerable importance of this factor is already suggested by the size of military expenditures. In individual countries these vary greatly. In extreme cases, it was noted, upwards of 30 per cent of output is devoted to military purposes; in other cases, the diversion is small, less than 1 per cent. Typical figures are in the range from 2 to 8 per cent. In all cases resources are involved which could be put to better use.

In the period under review, the economic outlook for the world has darkened considerably. This has underlined the intolerable character of the waste of resources and has added to the urgency of the many social and economic problems facing the world, problems whose effective alleviation would be greatly facilitated by the reallocation to socially constructive ends of the resources now spent on the arms race. In the 1970s inflation of a magnitude unprecedented in postwar history hit many countries. This coincided with a deep recession, also of a magnitude unprecedented since the Second World War, a recession which has been spreading from the developed market economies to other parts of the world. In many countries the growth of output has slowed down considerably in recent years. In some developing countries it barely, if at all, kept pace with population growth, and in some leading industrial countries it declined strongly in 1974-1975. At the same time problems of energy and raw materials added to this the necessity of

adjusting economies to higher energy prices and underlined the urgency of the problems of environment and of the preservation of natural resources. All this resulted in a deep recession. With serious food deficiency in large areas of the world, large fluctuations in the prices of raw materials, rapidly deteriorating trade balances and with world recession making its impact felt on exports and growth, many developing countries faced a situation of acute crisis. It is against this background that the economic and social impact of the arms race is being-felt.

But the high level of military spending in the world not only diverts resources that are urgently needed for dealing effectively with these problems, but also helps to exacerbate these problems. Large military expenditures contribute to the depletion of natural resources, tend to aggravate inflationary tendencies and add to existing balance-of-payments problems. In this way, they have contributed to economic disruption and political instability in some countries. Even so, the implications of an arms race and of military expenditures on the scale typical of the post-war period are much more pervasive than mere economic considerations would suggest. Being one of the main factors shaping the international context, the arms race exerts a profound influence on the politics, economy and society of many countries. In some cases an ever-present risk of interference by outside powers imposes narrow limits on foreign and domestic policies, limits that may run counter to national aspirations. In other cases the armed forces become a factor of decisive weight in internal politics. Military priorities may also exert considerable influence on the directions taken by the civilian economy.

So far, the high levels of military expenditure have not been noticeably affected by the economic recession which hit many countries after 1973. In some countries there is a marked contrast between a still buoyant military sector on the one hand, and a depressed civilian economy and tightening or downright austere government budgets on the other. In some limited aspects of the arms race, one can even register a new impetus directly related to features of the present economic crisis: some countries have been able to improve their balance-of-payments position by increased arms exports. In many industrialised and in a few developing countries the arms industry is now one of the fastest growing sectors of the economy. The international arms market has grown in recent years at a rate which contrasts sharply with otherwise sluggish trends in world markets.

Under conditions of full utilisation of the factors of production the deleterious economic effects of the arms race on consumption, public

or private, and on investment, are directly measured by the volume of resources absorbed for military purposes. When factors of production are idle, when, as in many countries today, there is deep recession and rampant inflation, the processes at work are different, though their effects are not less serious compared with those under conditions of full employment. In periods of recession when men and machines are idle, there is general waste of economic resources, and armaments production does not directly withdraw resources from civilian use, though it may do so (and frequently does) in some bottle-neck sectors. But growing expenditure on armaments is not an efficient way of combating recession. Expenditures on such items as education, health, housing and social welfare are more effective means for both economic and social reasons.

First, the maintenance of high and rising armaments expenditures in the face of stagnating or falling government revenues may lead countries to economize in such areas as health, education and welfare with all the negative social consequences this entails. Second, since in recent times recession tends to go hand in hand with high rates of inflation ("stagflation") and, in some cases, with heavy balance-of-payments deficits, high arms expenditures have proved to be a hindrance for economic policies leading out of recession. High government expenditure on armaments increases demand without increasing the volume of salable or exportable goods. It thus intensifies the problems of inflation and of the external balance. Military expenditures, therefore, reduce the effectiveness of expansionary policies or even lead to restrictionary measures in other fields which tend to prolong recession and unemployment. To the direct waste contained in armaments production is added the indirect wastage of unused resources.

Galloping inflation and the disruption of monetary systems have often in the past been associated with wars and rapid increases in military expenditure. The last years do not seem to constitute an exception to this. Successive crises on exchange markets and of the international monetary system as a whole are imputable in part to the massive creation of international liquidity through the deficits of reserve currency countries. World monetary reserves more than doubled in the brief period from 1969 to 1972 and they continued to increase by nearly 20 per cent annually in subsequent years. Over the same period, the "reserve currencies" component (mainly the United States dollar) nearly quadrupled, primarily as a consequence of the deficits in the United States balance of payments. These deficits were the result of

many, factors—including divergent monetary and economic policies in the United States and other countries and different productivity trends—but one of them was undoubtedly the substantial outflows connected with the war in Indo-China and other foreign military commitments. The monetary crises and the related depreciation of some main currencies have had a negative impact on the trade flows and on the fate of economic growth of many countries, especially the developing countries.

One of the main economic problems of the first half of this decade was the accelerating inflationary process in many countries of the world. Theory and data are not at the point where the role of the military expenditure in stimulating inflation can be quantified, but consideration of the various ways in which it can have an effect suggests that its contribution is not inconsequential. High military expenditures sustained over a long period of time are likely to aggravate upward pressures on the price level in several ways. First, military expenditures are inherently inflationary in that purchasing power and effective demand is created without an offsetting increase in immediately consumable output or in productive capacity to meet future consumption requirements. This excess demand creates an upward pressure on prices throughout the economy. This effect is stronger, the weaker and more narrow the productive base. Where military expenditure contributes to the creation of money for deficit financing of central government expenditure inflationary pressures are generated by the resultant increase in the stock of money.

Similarly, if military activities contribute to the emergence of deficits in the balance of payments in reserve currency countries then the stock of money and thus inflationary pressures grow in other countries. Second, there are reasons to believe that the arms industry offers less resistance to increases in the cost of labour and of the other factors of production than do most other industries¹ partly because of its highly capital and technology-intensive character, and partly because cost increases in this sector can more readily be passed on to the customer. These increases in the cost of the other factors of production then spread to other sectors of the economy, including sectors where the rate of growth of productivity is lower, forcing up their prices as well. Finally, and more generally, the diversion of substantial capital and R and D resources away from the civilian sector impedes the long-term growth of productivity and thereby renders the economy more vulnerable to inflationary “pressures. Inflationary trends, whatever their origin,

tend to be exported, affecting other countries in the form of price increases, scarcities or in other ways, depending on the circumstances. The inflationary impact of military expenditure on the prices of exported military goods to developing countries results in a deterioration of their terms of trade.

Altogether it is clear that some of the major economic problems of recent years, rapid inflation, trade imbalances and the disequilibria in international payments, are aggravated by the maintenance of large military efforts, even if the contribution of the arms race to these problems cannot be indicated in quantitative terms. In particular there can be little doubt that the effects of sustaining large military expenditures over a long period has contributed to current inflation and its persistence in times of economic recession and high unemployment. A significant reduction in world military expenditure would help in bringing inflation under control.

How the actual economic performance of individual countries, public and private consumption on the one hand, and investment and growth on the other is affected by their military efforts depends on a number of factors: the level of economic development, the nature of the economic and social system, the extent and effectiveness of government planning, the volume of military expenditures, political priorities and in particular the extent to which resources used for military purposes would otherwise have been devoted to consumption, private or public, or to investment, and many others. Nevertheless, a number of elements are common, and it is possible by means of general arguments to give an idea of the nature and, to some extent, the order of magnitude of the sacrifices in terms of consumption and growth imputable to the current arms race.

As regards economic development and growth in particular, the maintenance and arming of large standing military forces absorbs a volume of resources substantial enough to affect all the basic parameters involved: the volume and structure of investment, the size and composition of the work force and the rate of technological change.

The volume of investment which shapes the size and quality of the stock of capital is one of the basic factors determining the rate of growth. To what extent savings on military budgets would be transferred to investment depends of course on the economic framework, on political decisions and on the ways in which governments control the economy. Governments have means at their disposal, direct or indirect and of varying effectiveness, to redirect resources and to channel released

resources towards investment. Moreover, military budgets are significantly large in comparison with current levels of investment. Some 20 per cent of total world output is devoted to fixed capital formation, world military expenditures being equivalent to 25 to 30 per cent of this.²

In most countries, therefore, there is scope for significant rises in investment if military budgets are reduced. Even crude calculations indicate that the potential effects of this on growth could be substantial.³ If the greater part of world military expenditure could, instead, be allocated to investment, growth rates might be expected to increase by 1 or 2 per cent. This is in fact very large: perhaps one third of the growth rate achieved in the world as a whole in the early 1970s, and probably larger than the growth rate of world output in the mid-1970s. If such higher rates of investment are sustained, the effects on growth cumulate over the years. Thus, if half the funds spent on armaments throughout the world in the period 1970-1975 had instead been invested in the civilian sector, annual output at the end of this period could have been perhaps \$200 billion larger than it was. The sum of \$200 billion is somewhat more than the aggregate GNP of Southern Asia and the mid-African region,⁴ the two large regions of acute poverty and slow growth in the world, with a total population of over 1 billion people. Over a longer period the effects on world output of the reallocation of part of world military expenditures to investment purposes would be even more spectacular.⁵

The glaring investment needs throughout the world in housing, urban renewal, health, education, agriculture, energy, environment and many other fields need no further emphasis. During the last few years conferences on global problems convened by the United Nations, meetings of the specialised agencies and resolutions of the General Assembly itself have outlined or are in the process of outlining policies and programmes in the fields of science and technology, environment, population, industrialisation, food, habitat, raw materials and other subjects which will require considerable resources for their implementation. In many fields investment needs are growing rapidly, enhancing the deleterious effect of military expenditures. Continued economic growth presupposes increasing investments in energy and raw materials extraction, both from traditional sources and from new ones. Estimates of the costs of combating pollution indicate requirements of the order of 1.4 to 1.9 per cent of GNP under moderate assumptions and of the order of 2.5 to 4 per cent in a more maximalist version.⁶ To

eliminate extreme poverty and to diminish the gap between developing and developed countries, developing countries need to increase investments very considerably. To reduce by half before the end of the century the gap in *per capita* incomes between rich and poor countries, currently of the order of 13:1, the same calculations indicate among other things that the rate of investment in poor countries would have to be raised to 30 to 35 per cent of GNP, and in some cases 40 per cent. World agricultural production would have to increase three or fourfold as compared with 1970. This would require substantial investment in opening up new land, in irrigation and in the institution of high-yield techniques.⁷ It is hard to imagine that such programmes would be at all possible without radical cuts in military budgets.

Manpower is another major factor in the growth equation where a massive diversion to military ends is taking place. The volume of this drain on resources has already been considered in chapter II. Labour constitutes a real resource that can be put to useful work if released from military-related occupations.

This is not contradicted by the fact that in many countries a considerable fraction of the work force is now either unemployed or underemployed. For people are not unemployed because there are no more needs to satisfy. They are unemployed or underemployed because of recessions or structural problems in the economy, and these are themselves aggravated by high military expenditures. In most developed market economies the use of demand stimulus which could deal effectively with unemployment has been inhibited by fears that it would enhance inflationary tendencies and adversely affect the balance of payments. But as already noted, inflation and, in some cases, balance-of-payments deficits have probably been aggravated by high rates of military spending sustained over a long period. In any case, under appropriate conditions funds released from military budgets can be used to raise demand in the civilian sector without stimulating inflation, and, generally speaking, without affecting the balance of trade either way. Indeed, to the extent that military procurement is more inflationary than most other forms of expenditure a dollar for dollar reallocation of monetary resources to civilian ends would in the longer run ease inflationary pressures and leave greater scope for policies to curb unemployment.

Despite these obvious facts there is a tenacious myth, dating back to German rearmament prior to the Second World War, that high arms budgets protect against unemployment or at least mitigate it. This

belief has an air of self-evidence and is reinforced when, as has often happened, Governments have given publicity to the supposed employment benefits of arms procurement they were contemplating, without adding that alternative uses of the same funds would create jobs as well, normally many more. As a consequence it is still today a widespread belief that disarmament or discontinuation of some specific weapons programme would swell the ranks of the jobless, particularly when unemployment is already high. It should be stressed that such conceptions are wrong. Military outlays are not unique in their ability to generate employment. In fact, whereas military expenditures obviously create jobs in the industries supplying the armed forces, the growing high-technology component in military expenditures has eroded their direct and their over-all job-creating potential. Today there is rapidly accumulating evidence that high military budgets instead of alleviating over-all unemployment contribute substantially to it. According to the United States government estimates (and only for this country do figures seem to be available) a billion dollars of military expenditure creates 76,000 jobs.⁸ But if the same amount is spent for civilian programmes of the Federal Government it creates an average of over 100,000 jobs, and many more than this if channelled into activities that are particularly labour-consuming. Calculations indicate that if the same one billion dollars were released for private consumption by means of tax cuts It would create 112,000 new jobs.⁹ In other words, a 10 per cent cut in the military budget, that is to say a cut of \$8 to 9 billion and a corresponding tax reduction, could diminish unemployment by 0.3 million, and more than this if cuts and alternative programmes were selected with a view to maximising the effect on employment.¹⁰ Thus, the proposition that military expenditure generates employment at least effectively as, if not more than, non-military expenditure is demonstrably false.

The third major factor in the growth equation is technological change. It was pointed out in chapter II that it is in the field of research and development that the diversion of productive resources to military ends is most massive. Throughout the world an estimated 400,000 engineers and scientists are working on military projects. The opportunity cost of this diversion of resources is impossible to quantify. Its magnitude is suggested by recalling that while scientific and technological advances have yielded enormous benefits for mankind, some 40 per cent of the financial resources devoted to R and D since the Second World War have been used in the military field. It is also suggested by the vast and urgent problems which confront industrialised and developing

countries alike, and for the solution of which a vigorous and focused research and development effort is in many cases an essential prerequisite. Some of these problems were mentioned in chapter II and they need not be recalled here.

In the case of technological innovation, no less than in the case of manpower and unemployment, the true impact of high military expenditures has mostly been clouded in myth. The basic fact of an enormous diversion of resources has been disguised by excessive claims about the importance of civilian spin-offs from military research and development.¹¹ The drive for continuous improvement in weaponry and military equipment, so the argument goes, has been an important spur to technological progress, and, so it continues, without the urgency of military demands, funds on a sufficient scale would not have been forthcoming. A limited number of examples, always the same, are cited to prove the case: nuclear power, air transportation, radar, space technology and a few more. Yet a sober assessment indicates that the claims are grossly exaggerated, and even the standard examples are not all of them convincing.¹² In fact it is remarkable how many inventions of the greatest civilian importance in production techniques, in materials, in power generation, engines and appliances, in all fields of surface transportation and in communication owed absolutely nothing of their origin and very little, if anything, of their subsequent development to military R and D, even if they were often adopted by the armed forces and adapted to military requirements at a later stage. Military spin-offs from civilian research have been incomparably larger than civilian spin-offs from military research.¹³ The truly remarkable fact is how little that is new, not how much, has come to the civilian sector from military R and D efforts. Product development in the sense of incremental improvements in materials, in miniaturisation, in performance, in reliability, etc., has in some cases been made under military auspices, simply because this is where research and development funds have been readily available.

The typical emphasis of military research has been on devices which can perform the same functions as the old ones, only more accurately, more effectively and more reliably. The post-war association of the military sector with advanced and dynamic sectors of industry and research has therefore been conducive to an emphasis not on basic research and genuine innovation, but rather on product improvement geared to details of specifically military devices to such an extent that civilian spin-offs of importance have been few and far between. Military

technology is moving further and further away from any conceivable civilian use,¹⁴ and is anyway focusing on fields which are mostly irrelevant for the solution of the more important present and future problems of the world. There can be no doubt that in the final analysis technological innovation in the civilian sector and, with it, growth are not furthered by military research and development but are greatly impaired by it.

It has often been pointed out that in some developing countries the military sector has contributed substantially to technological training and has helped to raise the level of technical skills, providing partial compensation for the resources spent on military activities. It is clear, however, that programmes of industrial development, civilian community projects and the like can achieve those results in a more direct, pertinent and cost-effective way.

Looking at the growth experience of industrialised countries in the post-war era it can be seen that there is a certain tendency for high economic growth and relatively low military expenditure to go together.¹⁵ While this can be easily understood as a consequence of the factors that have already been mentioned (more investment and R and D available for the civilian sector), there are probably also some indirect interrelations at work here. Some economists have pointed out that economic growth is facilitated when a country has a dynamic export sector. Competing on the world market ensures and fosters productivity and technological innovation, and a steady flow of foreign exchange earnings provides the basis for an expansionary economic policy free from balance-of-payments difficulties. Countries whose advanced industrial sectors were less preoccupied with meeting armaments demands had a better chance to respond to a growing world demand, particularly in the dynamic sectors such as transport equipment, machinery, chemicals and electronics. Thus lower military expenditure, specifically a smaller indigenous weapons development and production capacity, can help to improve the export position and through it the growth performance.¹⁶

High military expenditure, on the other hand, seems to have contributed to the growth difficulties of some industrialised countries, not only by diverting capital and skilled personnel from productive employment, but also because a secure and profitable domestic market for arms production reduced the need for and the efforts of firms to compete on world markets. Lower productivity growth and balance-of-payments difficulties can then lead to a retardation of economic

growth. The concentration on unproductive armaments production is, moreover, often accompanied by heavy subsidisation of civilian projects in such fields as aerospace, even though their social utility may be limited and their marketing prospect poor. The distortions in the economy and the squandering and misallocation of resources to which the military effort gives rise, is in such cases much larger than military budget figures might lead one to expect.¹⁷

From the point of view of individual firms in market economies working in those branches of industry which cater to both civilian and military needs, the situation is obviously different. For those particular firms, military orders accelerate growth instead of impeding it. Even in the absence of spin-offs proper, military orders will tend to raise the general level of competence of the firms filling them, will enable them to operate on a larger scale and may perhaps provide some protection in case of faltering civilian demand. The aircraft industry provides the clearest illustration of this and of the competitive advantage which the industries of the large military spenders get from the indirect subsidy to civilian production that is normally inherent in military orders. Pressures to maintain international competitiveness in those particular branches of industry provide one of the mechanisms of a non-military nature whereby the arms race is propagated among the major industrial powers. For aerospace industries, for example, the indirect subsidies to civilian production arising from filling military orders are often of considerable importance if they are to remain competitive. Producers in countries where military purchases are small, relatively speaking, are at a serious disadvantage, and, if other forms of subsidy are not available, they may exert pressure for more vigorous armament programmes.

The international sale of arms, or, more precisely, of military goods and services, today by far the most important part of arms transfers, is an aspect of the arms race which also has direct and indirect implications for the economies of the countries involved. For all those countries which are not major weapons producers themselves, an increase in military expenditures will normally mean increased imports and will result in a deterioration of the balance of trade. The availability of arms on a grant basis or at concessionary prices is now distinctly limited. For the majority of countries in the world the arms race thus compounds balance-of-payments difficulties that are in many cases already severe. The fact that imports for military purposes generate no income and no exports with which to service the added debt further

aggravates the longer-term effect on the balance of payments. For some developing countries facing acute debt-servicing problems, the balance of payments aspect of the costs which the world-wide character of the arms race imposes on all countries is particularly salient.

The trade in arms has opposite effects on the economies of importing and exporting countries. What is involved is a highly unequal exchange, detrimental in particular to efforts to bridge the gap between poor and rich countries. For the importer of arms it is in economic terms a pure waste of surplus which could have been used productively. Even when weapons are provided as gifts there are maintenance, operation and infrastructure costs to be included on the debit side. In contrast to the import of civilian goods these outlays raise neither consumption nor production and generate no future output from which to pay for them. Not so for the exporting country. That part of its arms production which is destined for its own armed forces again figures to a first approximation simply as an economic loss. But its production of weapons for export is no different in economic terms from any other export production. In some cases it may be in fact more advantageous than other kinds of export because the advanced-technology component in arms exports is particularly high. These exports therefore tend to stimulate important sectors of the economy of the exporting country, such as mechanical engineering, electronics and the industries supplying these sectors. Recent arms deals involving highly sophisticated equipment have enhanced these tendencies since the price of such equipment often includes a large component to pay for R and D costs. In addition to orders for existing weapons, some recent contracts have even involved the development of new or improved weapons systems specially for export to the contractor. In this way importing countries are subsidising military R and D in the arms exporting countries. This also applies when, instead of importing weapons, countries produce them under licence. In most cases this subsidy is of marginal importance for the exporting country but in a few cases the viability of certain national arms industries or of particular companies is significantly affected. In a very real, although often marginal, way importing countries are thus helping to perpetuate the lead in military technology of the main arms exporting countries and to sustain the rate of innovation and obsolescence in weaponry.

In the countries with a centrally planned economy the negative consequences of military expenditures are in principle of the same character as in other economic systems, but they make themselves felt

in a different socio-economic context. In planned economics the volume and structure of both investment and consumption are directly regulated by the State, the central plan specifying tasks in mandatory fashion. These countries have maintained relatively high rates of development and have preserved a high degree of monetary stability also in the 1970s. But also for these countries military expenditures represent lost opportunities for economic and social development. Military expenditures are a drain on resources which could have been used for civilian purposes, either to accelerate growth and modernisation in such fields as industry, agriculture, transport, or to raise the standard of living and improve the quality of life. If these countries did not feel the need to devote a certain proportion of their material product to military purposes, they could shorten the time-span needed to fulfil their long-term development targets and they would be in a position to give added dynamism to their participation in international economic exchanges.

The diversion of manpower to military purposes is also an important matter in view of the scarcity of labour resources which, to a greater or lesser extent is making itself felt in all centrally planned economies and is becoming one of the main factors limiting further growth of production and services. Military demands on energy and raw materials as well as on production and research capacities which could otherwise be fully utilised for civil purposes, also exerts a considerable negative influence on further economic development. Even if central planning in principle allows available resources to be allocated so that military expenditures do not distort resource allocation in the economy as a whole, military expenditures necessarily diminish the rate of economic and social development. In case of the reduction of military expenditures the centrally planned economies will have the tools necessary for the reallocation of released resources, subject only to the obvious technical constraints inherent in existing machinery, plant and skills.

Most of the remarks in this chapter and elsewhere in this report apply generally to all countries. But as with centrally planned and developed market economies, certain additional comments can be made with respect to the developing countries. In many of these countries, economic and social development programmes are largely determined and financed by the Government. Military expenditure and development programmes appear as direct alternatives for the allocation of government resources. In recent years military expenditure in many of these countries has been growing faster than the civilian economy

thus narrowing the scope for effective development programmes. More specifically, the general negative effects of resource diversion to military uses tend to be aggravated in developing countries because modern armed forces make heavy demands on many of the resources which are most needed for development and which constitute severe bottlenecks in many cases: foreign exchange, skilled technical and managerial manpower and maintenance, repair and industrial production capacity.

Skilled manpower is one of the scarcest resources in developing countries. As already noted, the complexity and sophistication of much of the military equipment now being acquired is such that its operation and maintenance make very large demands on skilled technical and managerial manpower. Much of it has to be imported as foreign technical staff. In other cases, training is provided (at the buyer's expense) in the supplying country.¹⁸ Even so, most of the technical staff has to be taken from the limited pool of the recipient country. In view of the fact that total employment in manufacture in these countries is mostly only a few times, occasionally as much as 10 times, the size of the armed forces, this diversion of resources may be important.

Steep increases in military expenditure have been registered in countries engaged in protracted international conflict and/or where social conflicts are sharpening and social inequalities are increasingly felt. To countries in this situation an assessment of the burden of militarism in terms of diverted resources is inadequate. Major social and political costs must be added, as must the immense destructiveness of modern warfare and domestic armed conflict in terms of human lives, of production facilities and infrastructure, and even of the physical environment.

The continuation of the arms race tends to draw all countries along with greater or lesser delays. In the process the limited strength of smaller countries and of countries with a limited industrial and technological base is undermined. These countries find themselves in a situation where the rate of innovation in military technology is set by countries with much greater resources. Under these conditions, merely keeping abreast in the arms race will require ever greater sacrifices. An ongoing arms race with its inherent tendency to spread and intensify in geographical, technological and economic terms will constitute an ever greater obstacle to social and economic progress in all countries and to the urgent development tasks of developing countries in particular. No task is more urgent than to stop this technological spiral at the centre of the world arms race where it originates, and

through substantial disarmament in the leading military powers, to pave the way for major reductions in arms expenditures throughout the world.

Closely related to the topics dealt with here is the question of possible economic effects of disarmament. It follows from what has been said so far that whatever the socio-economic system of individual countries the long-term economic effects of disarmament would be wholly beneficial to them. That point is no longer disputed and is not the issue here. But the fear has also been voiced that in the short term, until reconversion of plant and installations is completed, and redeployment of personnel and employees has taken place, disarmament or significant cuts in military expenditures might cause economic disruption, recession and an increase in unemployment. The possibility that localised and temporary difficulties may arise is not excluded by the fact that the over-all economic effects of disarmament would be highly beneficial. Indeed, there have been cases when such difficulties did occur as a result of the discontinuation of specific military programmes. Nevertheless, it is important to note that the over-all effect to be expected from disarmament is not recession but, given the necessary compensatory measures, stimulation of the economy and a decline in unemployment.

A recent study on the effect of disarmament on aggregate demand and unemployment confirms this.¹⁹ In many of the branches now supplying the armed forces with food, clothing, transportation equipment, construction and so forth demand would thus be unaffected by disarmament or it would rise, and redeployment to satisfy civilian needs would be straightforward. Apart from such sectors, military procurement is characterised by high concentration in particular industries. In the aerospace and the ordnance and equipment sectors, for instance, military procurement may account for half or more of total output. In some others such as shipbuilding, transportation equipment and electronics and communications, while smaller than this, it may still account for a very large fraction of output.²⁰ Moreover, military production, installations and institutions have in many cases become concentrated in certain regions or localities in which they account for a very large part of employment and income. For such industries and regions a substantial, rapid and unanticipated decline in military orders could lead to localised recession. But if cuts in military expenditure are spread over a number of years and adequate compensatory steps are taken, economic disruption, even in the short term, would be minimal.

We fully agree with the conclusion of the 1962 experts' report on *Economic and Social Consequences of Disarmament*, that no major instability need result from disarmament.²¹

It is not intended to belittle the economic problems associated with disarmament. The most severe problems, which are common to countries with different socio-economic systems, stem from the inevitable lack of complete coincidence between the manpower and facilities made redundant by cuts in military expenditure and those for which demand would rise as a result of the reallocation of funds to civilian ends. In the short run the skills required for expanded civilian research programmes might not precisely match those released from military programmes. Similarly, some firms now producing military equipment would need time and capital to readjust to civilian production. Adequate funds for compensation or conversion for these sectors and special development programmes for regions or towns which would be particularly affected would, however, absorb but a tiny part of the resources saved. None of these problems are insurmountable from an economic or technical point of view.

Nevertheless, it would be of great importance if plans and legislation to facilitate conversion from military to civilian production were drawn up and adopted as soon as possible. One useful approach of a general nature is to require of industries that they rely on military orders for less than some given percentage of their production.²² Industries for which this is impossible for technical reasons may be required to seek location in communities and regions which are likely to be able to absorb their work force with its particular combination of skills in case it is made redundant. In some cases it may be desirable to disperse military production around the country. Another approach, not an alternative but a complement to this, is to require factories engaged in military production to draw up alternative plans for using their equipment and employees in civilian pursuits. Such measures would not only be of assistance in disarmament, they would also help to break some of the most powerful coalitions of political forces opposing disarmament by rendering industry and workers less dependent on a steady flow of military orders. But it must be recognised that conversion is primarily a question of particular communities, particular plants, particular groups of workers and scientists and that it needs to be dealt with in concrete terms to be effective in this respect. When alternative plans are not available there may be a temptation, and sometimes irresistible pressures, to devise some new weapons project merely to keep the industry going.

A related problem which has sometimes been raised is the dependence of some developing countries on continued sales of raw materials for which military demand is an important part of total demand, or on revenues from major base facilities on their territory. Calculations reproduced in annex III of the 1971 report attempted to assess the magnitude of the first of these problems. It was shown that for none of the raw materials studied, except perhaps for bauxite, would conversion from military to civilian consumption patterns have any noticeable effect on demand. Even for bauxite the decline in aggregate demand following disarmament was estimated to be less than 5 per cent. These are obviously problems of a very limited kind which can readily be solved by temporary compensation.

However important the many costs of a growing military sector which have been dealt with so far, it is clear, nevertheless, that the domestic consequences of involvement in the arms race cannot be reduced to the economic costs and to the direct social consequences of diminished civilian production and growth. To regard it thus is to miss one side of the picture altogether. Contemporary military institutions are often such powerful and pervasive parts of society that they can have a considerable impact on political and social conditions and perceptions and can place important constraints on the evolution of societies. In this sense they can represent a major social force, influencing the social, political and ideological development of a country. The impact of military institutions on social processes, while less amenable to meaningful quantification and not easily ascertainable in general terms, valid for all countries, nevertheless needs to be considered to make the picture complete.

To what extent military forces come to act also as a social and political force, and if so what forms it takes, depends very much on circumstances, on the social framework, on economic conditions and on the political context. It would be a crude oversimplification to assume that the military establishment is the same phenomenon everywhere or that its specific political impact could be talked about in general terms. Traditions, political and social affiliations, historical experiences in connexion with former wars or liberation struggles and the pattern of interrelationships with other institutions in society are too diverse. There are cases in which the armed forces have become, for one reason or another, centres of attraction or incubation of modernising forces in society and have played a role in social development going far beyond their strictly military functions. In other cases they have constituted a major hindrance to social development and have served to perpetuate

privileges and to repress popular aspirations. Nevertheless, it should be recognised that the military institution in the wide sense (including such institutions as paramilitary forces or secret services which may be formally independent of it) enjoys a unique position of strength in many societies. This is due to a variety of factors. First, there is its sheer mass combined with a centralised organisation. Second, there is the privileged relations which the armed forces may entertain with key sectors of industry, being at once a customer and a link to Government. Third, there is a privileged relation to the State and many areas of government policy (foreign, industrial, infrastructural, regional and others, depending on the circumstances). Fourth, the military institution can, to a varying degree, protect its operations from public scrutiny, and conduct a variety of activities under the label of national security. These may range from the establishment of a full-fledged covert foreign service or the covert conduct of foreign wars to moderate or more comprehensive surveillance of categories of political opponents. Last, but of course not least, the armed forces enjoys a monopoly of physical force and a position of instrument of ultimate recourse, vis-a-vis other States and internally.

It is the integration of this social force with industry and Government which has been described as the “military-industrial complex”, whose “total influence—economic, political, even spiritual—is felt in every city, every statehouse, every office of the Federal Government”.²³ There are very few countries where the interconnexions between the armed forces and other sectors of society, and the over-all social, political and economic implications of this has been studied in as much detail as in the United States, but it needs emphasising that such inter-penetration is in no sense an exclusively American phenomenon. Wherever they occur, military-industrial or military-economic-political Complexes have a self-preserving and self-reinforcing character. They are powerful, resourceful and pervasive coalitions that have developed around one common purpose: the continued expansion of the military sector, irrespective of actually military needs. In those countries where their influence is strong, such complexes are obviously an important factor in, the perpetuation of the arms race. Many studies of the military-industrial complex in the United States (but their results can to a greater or lesser degree be generalised to other countries) have shown its ability to keep fears alive, to stimulate them when needed, and to initiate compensating activities to offset the effects of more marginal types of arms control measures. Disarmament efforts, if they are to be successful, will have to take account of this.

If the over-all weight of the military in the internal, political, social and ideological processes of countries is fairly obvious and can be described in general terms, the specific direction in which it exercises its influence is not always readily apparent. There are many countries where major internal conflicts have been avoided or contained for so long without the active involvement of the armed forces that these have come to be regarded as genuinely neutral in regard to internal social and political processes, and concerned solely with the prevention of foreign aggression. What has already been said about the complex interlocking between the military and other social forces suggests that this cannot always be the case.

Militarisation often goes hand in hand with social tension. As a means of domestic repression it is not least characteristic of countries where considerable social differences and extreme exploitation of large sectors of the population prevail. South Africa may serve as an extreme illustration, but a similar pattern, albeit not with the same racial dimension to it, can be found in other places. In such countries it is not unusual to find, for a period at least, a considerable rate of economic growth together with heavy expenditure on armaments and on domestic policing. To conclude from such instances that high military expenditure is consonant with economic growth, is to disregard the social ends for which growth is only a means.

In most cases one may assume that the military institution and the armed forces have a double role. They are at once an ultimate recourse in external affairs and an ultimate arbiter in internal affairs. These roles are not always unrelated. In an environment of external confrontation the limits of tolerated dissension get narrowed down, and the real or supposed external threat could become an argument for increased repression. Conversely, when internal dissension transgresses these limits, and when means for satisfying basic needs and aspirations are scarce, there could be a temptation to seek temporary refuge in domestic repression or in the escalation of foreign confrontation. Here Governments can get trapped in an impossible situation where an increasing burden of military expenditures further delays economic and social progress, freezes social structures and exacerbates social tension, while other policies seem to be precluded by the context of confrontation and arms race with neighbouring countries. The conjunction of external and domestic confrontation, both of them temporarily stabilised through military build-up but ultimately exacerbated by it, can give rise to a particularly precarious situation.

In the industrialised countries in the forefront of the principal arms race, external confrontation and internal policies may also be coupled. The witch-hunts at the height of the cold war provide a vivid illustration. The worst excesses of this period have been overcome, but the atmosphere of "total defence" with its systematic channelling of national energies into international suspicion and confrontation and the tendency to regard opposition as unacceptable continues to exist. Detente, obviously, has an important role to play, but it must be stressed that if it is not followed by military reduction and disengagement, it cannot be expected to be a lasting and irreversible phenomenon.

In the 1971 report, it was already pointed out how the fears engendered by the nuclear arms race and the madness of having to live with stockpiles of nuclear weapons sufficient to destroy humanity altogether, kept in a state of constant readiness and subject to human or technical fault, have contributed to disaffection and disillusion, particularly among the young. There can be no doubt that the continuing arms race and the growth of violence in the world adds to the disaffection of many people, to their sense of futility and powerlessness, and turns them away from socially constructive ends.

The arms race not only entails heavy economic sacrifices. It also threatens and perverts democratic processes, and weakens those processes of social evolution which provide the only real hope for the future of mankind.

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1. This is considered more fully in Ulrich Albrecht, "Armaments and Inflation", *Instant Research on Peace and Violence*, No. 3, 1974.
2. Note, however, that part of military expenditure constitutes investment and may be included in figures for total investment. Figures for a number of countries are given in annex II.
3. The impact of additional investment on the rate of growth is determined by the so-called marginal capital/output ratio. As mentioned in the 1971 report, studies suggest that for developed countries this parameter is in the region of 3 to 4, meaning that in order to raise the rate of growth by 1 per cent, investment must be raised by the equivalent of 3 to 4 per cent of GNP. In actual fact there is little experience with so sudden and massive increases in either investment or growth rates. For large transfers of resources from military purposes to investment, marginal capital/output ratios are therefore no more than a rough guide, indicating the order of magnitude of the likely effect on growth.
4. Africa, excluding south Africa, Southern Rhodesia and the countries bordering on the Mediterranean.

5. A calculation along similar lines of growth forfeited in five Middle-Eastern countries may be found in Fred M. Gottheil, "An Economic Assessment of the Military Burden in the Middle East", *Journal of Conflict Resolution*, vol. 18, No. 3, September 1974, pp. 502-513.
6. W. Leontieff, *The Future of the World Economy* (New York, Oxford University Press, 1977).
7. *Ibid.*, p. 38.
8. "Projections of the Post-Vietnam Economy, 1975" by the United States Department of Labor, Bureau of Labor Statistics, 1972.
9. "The Structure of the U.S. Economy in 1980 and 1985", United States Department of Labor, Bureau of Labor Statistics, 1976. The figures cited refer to 1975.
10. See also Marian Anderson, *The Empty Pork Barrel*, Public Interest Research Group in Michigan (PIRGIM), 1 April 1975.
11. For example, O. Morganstern, *The Question of National Defence*, New York, 1960.
12. Nuclear power generation was invented before any work started on nuclear weapons, and it is certainly open to question whether the civilian spin-offs from subsequent military nuclear research have outweighed the diversion of entire generations of nuclear scientists and engineers to military pursuits, Supersonic aircraft technology which has absorbed a large part of military R and D funds for decades, has been from the civilian point of view mostly wasted or achieved at an excessive cost, to say nothing of R and D on weapons which have no civilian counterpart at all. Nor is it clear why air transportation should have needed the spur of military applications to develop, when surface transportation did not, and nothing suggests that product innovation in fields such as chemical processes, medical drugs and synthetic materials, where military research has played no major role, has lacked in dynamism.
13. If one considers, for example, the entire nineteenth century, when in many respects the basis of contemporary industrial societies was laid and when the techniques of war were revolutionised by the application of new technologies of civilian origin, there are not many instances of the opposite process, of substantial civilian spin-offs from military technology. This, of course, does not prove that the immeasurably larger military research and development efforts of the last decades have had no effect on civilian technology (they obviously have), but it does suggest that rapid and far-reaching technological change does not need the spur of military requirements.
14. F.A. Long, *Growth Characteristics of Military Research and Development. Impact of New Technologies on the Arms Race*. The MIT Press, 1971, pp. 288-289. Also Organisation for Economic Co-operation and Development, *Government and Technical Innovation*, Paris, 1966, p. 31.
15. There is, for example, a very marked inverse relationship between the proportion of GNP devoted to military ends and indicators of the investment and growth performance for the seven largest developed market economies

- in the period 1960-1973. High rates of military spending show a close relation to (relatively), low rates of fixed investment (excluding residential fixed investment), and this in turn correlates with (relatively) low rates of growth of aggregate output and of output per manhour in manufacturing. (Ruth Sivard, *World Military and Social Expenditures*, 1977, p. 13.)
16. For a more thorough discussion, see K. W. Rothschild, "Military Expenditure, Exports and Growth", *Kyklos*, 1973, pp. 804-813, and papers by *Arbeitsgruppe Rilstung and Unterentwicklung*, Hamburg,
 17. Measures of so-called "economic defence" In the form of subsidies to branches of production that are needed to ensure self-sufficiency In case of war and blockade may similarly have an Important distorting effect on the economy— indeed, such is their purpose. An Indication of the volume of funds that may in tome possibly exceptional cases be devoted to this Is provided by the reply of Sweden to the note verbale of the Secretary-General. It appears that in Sweden economic defence measures, publicly and privately financed, add 10 to 15 per cent to the military budget proper.
 18. For example, the cost of training a Mirage III interceptor pilot in France, including the amortisation of equipment, is estimated to be close to \$1 million (*Le Monde*, AS January 1974).
 19. S.P. Dresch, *Disarmament: Economic Consequences and Development Potential*, 1972.
 20. See, for example, the reply of the United States to the note verbale of the Secretary-General (A/32/88/Add.1).
 21. United Nations publication, Sales No. 62.1X.1.
 22. Attempts in this direction have been made in Sweden, see A. Myrdal, *The Game of Disarmament*, New York, 1976, pp. 152 and 355-356.
 23. President Eisenhower, Farewell Speech to the Nation.

31

ECONOMIC AND SOCIAL CONSEQUENCES OF THE ARMS RACE AND MILITARY EXPENDITURES

In March 1987, at the request of the United Nations General Assembly, the Secretary-General established a group of experts to study the economic and social consequences of the arms race and military expenditures. The members of the group included: Lazhar Bou Ouni of the University of Law and Political Science in Tunis; Jan Chandoga of the Federal Ministry of Foreign Affairs of Czechoslovakia; Hendrik de Haan of the University of Groningen in the Netherlands; Dragomir Djokic, Deputy Permanent Representative of Yugoslavia to the United Nations; Constantin Ene of the Ministry of Foreign Affairs of Romania; Juan E. Fischer, Alternate Permanent Representative of Uruguay to the United Nations; Ladislav Matejka of the Permanent Mission of Czechoslovakia to the International Organisations in Vienna; Adrianus Mooy of the National Development Planning Agency in Jakarta; Semen N. Nadel of the Institute of World Economy and International Relations in Moscow; Waliur Rahman, Ambassador of Bangladesh to Italy; Christian Schmidt of the University of Paris; Amada Segarra of the Institute of Diplomacy and International Relations in Guayaquil, Ecuador; Darold W. Silkwood of the United States Arms Control and Disarmament Agency; and Margaret Vogt of the Command and Staff College in Jaji-Kaduna, Nigeria. This report, which will be considered by the General Assembly in November 1988, is the fourth in a series carried out by the United Nations on this subject since 1971.

Conclusions and Recommendations of the United Nations Study

During the 1980s the arms race has continued, in particular in its qualitative aspect, unabated, in fact expanding in scale and accelerating in pace. This development has been most conspicuous in the case of nuclear weapons, and calls for their reduction and ultimate elimination.

The arms race accounts, overall, for about 6 per cent of the world's output, and much more in some critical areas. The ongoing development of technology has transformed the military environment and brought about a variety of political and socio-economic consequences. As the burdens of the arms race vary considerably from one country or group of countries to another, the economic and social consequences are different and defy any easy generalisation. On the other hand, the arms race, as a global phenomenon, has a bearing on the security and development of each and every nation. The arms race phenomenon has become increasingly interconnected, both across national boundaries and across its functional divides, such as its military, political and economic aspects. Qualitative and quantitative expansion of the arms race has a negative impact on international relations and their stability.

The present study shows that military expenditures have extensive social and economic consequences. Economic effects are most pronounced in leading military spenders, and in particular in those areas of their economies which are dominated by modern science and technology, which is a key factor in the present arms race. The negative long-term consequences of military expenditures overshadow any positive short-term effects. Therefore, military expenditures, contributing to economic stagnation and structural dislocation, influence the economic and political future of main spenders and their mutual relations, shaped by competition for control over modern technologies. In the developing countries, too, there exists a choice between the urgent need to stimulate economic development, on the one hand, and military spending on the other. The social and cultural consequences of the arms race are visible in every country involved in it, affecting both the allocation of resources and the political atmosphere in their societies. The social effects are most deeply felt by the underprivileged, whose basic needs are not met because of the lack of adequate resources, some of which are absorbed by the arms race. There is a genuine trade-off between the allocation of national resources to military purposes and the ability to solve global social problems. The Group of Experts underlines the need to consider this trade-off in making policy decisions in this respect.

As conventional weapons and armed forces consume the bulk of the world's military expenditures, their limitation and reduction are also increasingly relevant. Apart from social priorities, the need to reduce conventional weapons can be justified by other considerations as well. The conventional arms race extends from global to regional and local levels, feeding tensions and conflicts, which kill civilians and soldiers alike and constitute a threat to human rights.

The efforts to stop the arms race, in particular in its nuclear aspects, are a sign of the widespread pursuit of a more secure and liveable world. This desire for a world in which military force would be effectively constrained was stressed in the Final Document of the Tenth Special Session of the General Assembly, the first special session devoted to disarmament, held in 1978:

“The ending of the arms race and the achievement of real disarmament are tasks of primary importance and urgency. To meet this historic challenge is in the political and economic interests of all the nations and peoples of the world as well as in the interests of ensuring their genuine security and peaceful future.”¹

To achieve these objectives, States and their political leaders should consider taking effective action to curb the arms race and start real disarmament both by bilateral and multilateral agreements and by national measures of self-restraint. A long-term perspective should also include determined action aimed at the cessation, through negotiations, of the applications of technological innovations, which sustain the arms race.

The intensification of the arms race has given rise to new political perceptions both among the general public and among policy makers. It has been realised that nuclear war can serve no conceivable purpose; there would be no victor in a nuclear conflagration. Therefore, the prevention of nuclear war has a high priority in the efforts to assure the survival of mankind. To contribute to this objective, States should settle their disputes exclusively by peaceful means and take steps towards general and complete disarmament under effective international control. The growing public perception of the diminishing political and military utility of nuclear weapons has facilitated first steps in this direction. Accompanied by effective verification procedures, the Treaty between the United States of America and the Union of Soviet Socialist Republics on the Elimination of their Intermediate-Range and Shorter-Range Missiles (INF Treaty) has opened a new path towards deep reductions in strategic nuclear weapons. This is a significant political development, one that promises, especially if supported by the limitation and reduction of other nuclear weapons and of conventional weapons, to enhance the security of all countries.

As stressed in the Final Document of the International Conference on the Relationship between Disarmament and Development, in 1987, disarmament, development and security are comprehensive phenomena. For this reason the relationships between them are often complex and are difficult to describe in a simple manner. It has become clear, though,

that security has to be defined as a broad concept. A comprehensive notion of security includes many development issues as relevant components of safety from threats to the survival, integrity and well-being of humankind. In this sense, equitable development contributes to both national and international security. Disarmament has to contribute to both security and development. In addition to making such a direct contribution, disarmament can also facilitate a reallocation of human and national resources to prepare the way for further development efforts. These developments could strengthen the basis of security.

Distortions in international economic relations, including the problems of commodity prices and indebtedness, add urgency to the need for co-operation between developed and developing countries. Industrialised countries should assume a greater responsibility in fostering development co-operation in the context of official development assistance. With progress in arms limitation and conflict settlement, the political attention of the international community should be shifted more effectively to problems of underdevelopment, insecurity and ecological deterioration. Such a re-evaluation of priorities should be accompanied by the rebuilding of international multilateral institutions and co-operation, both global and regional. High military spending in some developing countries and requests for higher development aid are competing priorities.

The Group of Experts emphasises that the promotion of international action both for disarmament and for development calls for a more effective United Nations. Co-operation in the overall strengthening of the Organisation should pave the way for the improvement and enhanced functioning of multilateral international institutions in general. Efforts in this direction should be directed at improving their effectiveness as sources of information for all nations in the study of the arms race and in the field of arms limitation and disarmament, as well as for the detailed analysis of the information gathered for these purposes. The United Nations family of organisations should thus assume an improved role in harmonising the views and interests of States and in encouraging their adoption and implementation of positive, action-oriented policies.

The United Nations, in addition to its role in the consideration and negotiation of international arms limitation agreements, could also offer to contribute to their verification and compliance. The early settlement of disputes, inspired by the United Nations, would help preclude the

use of force in international relations and hence of resources for armed conflict and destructive purposes, which are clearly inimical to development efforts. Such settlement of disputes, together with the promotion of co-operation between States, would reduce the motivation to initiate and sustain arms build-ups. Accordingly, the total effect of co-operative efforts by States to improve understanding, to solve inter-State disputes and to end conflicts would not only be their contribution to peace and stability, but, as a consequence, they would also reduce the consumption of scarce resources by the military and permit at least their partial reallocation for social and economic development, particularly of developing countries. Even in the event of hostilities, the development aspect does not become irrelevant. The specialised agencies of the United Nations, regional organisations, such as the Organisation of African Unity (OAU), and some non-governmental organisations can contribute to the reconstruction and rehabilitation processes. Also, in addition to separating the parties to an armed conflict United Nations peace-keeping forces have, in some cases, provided, and they could continue to provide, health care to local peoples and assistance in the rebuilding of their communities.

The United Nations system has wide-ranging knowledge and experience in several issue areas. This expertise could be more effectively utilised in the study of complex linkages between disarmament and development. More concretely, specialised agencies of the United Nations could carry out practical studies on how disarmament could contribute to development in their respective areas of competence.

There is a growing need for enhanced international co-operation to protect and ensure the future of the global commons, ranging from oceans through polar regions to space. The need to combine the requirements of security, economic development and ecological balance in the global commons has become increasingly obvious. Therefore States should co-operate in efforts to promote international security, economic development and ecological balance.

The arms race continues to have extensive social and economic consequences both in developed and developing countries. And while the efforts towards the limitation of nuclear, chemical and conventional arms and armed forces are aimed at the enhancement of international and national security, the social and economic implications of such efforts should not be neglected. Instead, systematic advance evaluation of the socio-economic impact of the arms cuts and the preparation of

plans for conversion from military to civilian uses would facilitate the process of disarmament. As a matter of fact, research on the social, economic and technological consequences of negotiated arms reductions should be expanded in both the academic and the policy-making communities.

Conversion is a critical factor in the implementation of political decisions to reduce weapons and to dismantle their production facilities. In order to be successful, efforts at conversion must address in a pragmatic manner the relevant economic and technological issues in order to find solutions. This requires, in turn, the involvement of the people affected in the local process of conversion. This process has a macro-economic dimension, which can be managed only at the national level. To explore this in greater depth, national studies on the feasibility and extent of conversion have been undertaken in some countries. Such studies can provide useful information for political and economic decision-making and should be encouraged. The United Nations could lend an international dimension to the study of the conversion of resources from military to civilian uses by appointing a group of experts to explore this issue in depth.

In general, the public perception of the arms race and its consequences is a critical link both in the definition of the present situation and in the efforts to eliminate the danger of war. In this regard, non-governmental organisations are important intermediaries in articulating people's opinion and transmitting it to the process of policy-making. One segment of youth takes an active part in the anti-war movement. The other segment does not yet realise the full danger of a nuclear war for humankind. Therefore the United Nations, in the framework of its World Disarmament Campaign, should consider a programme of information especially focusing on young people, aimed at their better understanding of the content and consequences of the arms race and the potential consequences of nuclear war.

Military expenditures, in particular by the major Powers, have obvious consequences for the functioning of the world economy, affecting, *inter alia*, international trade and capital flows, the transfer of technology and the international financial system. In the light of these multifaceted international economic consequences of the arms race, the recommendation made by the Panel of Eminent Personalities in the Field of Disarmament and Development, under the auspices of the United Nations, is most relevant. They call for "periodic assessments

of the impact of world-wide military spending on global economic prospects, bearing in mind the emerging supply and demand-side constraints on economies at different levels of development".² Similarly, the International Conference on the Relationship between Disarmament and Development concluded in its Final Document that "the United Nations should continue to undertake, on a regular basis, analysis of the impact of global military expenditures on the world economy and the international economic system".³

A pertinent example of the impact of military expenditures on international economy is provided by the budget deficits, which, in many countries, are due to extensive military spending. These deficits tend to increase the volatility of international economic relations, affect interest rates and steer international financial flows. Given the manifold repercussions of military expenditures on the stability and growth of the world economy, more research in this area would be valuable. There is rather solid evidence concerning the impact of military spending on the development of national economies in terms of their growth rates, capital investments and employment. There seems to be much less reliable knowledge on the interrelationship of military allocations and the international economic processes. Therefore, the Group of Experts recommends that the United Nations support studies on the effects of military expenditures on international trade and finance. More research is also needed on the impact of arms reductions on the economies concerned as well as on their indirect effects on the economies of other countries.

A necessary condition for public accountability of the socio-economic burden of the arms race is full openness of information about the magnitude of military spending. At present it is impossible to give a reliable figure of the global military expenditures or even of the military spending by some major participants in the arms race. Therefore the Group of Experts strongly endorses the relevant statement of the International Conference on the Relationship between Disarmament and Development:

"An improved and comprehensive data base on global and national military expenditures would greatly facilitate the study and analysis of the impact of military expenditures on the world economy and the international economic system. To this end, the broadest possible number of States should provide objective information on their military budgets to the United Nations according to agreed and comparable definitions of the specific components of these budgets. In this connection, the

work under way in the United Nations for a systematic examination of various problems of defining, reporting and comparing military budget data should be intensified.”⁴

The previous reports as well as many General Assembly resolutions underline the fact that the activities of the United Nations relating to military budgets, including the collection of the military expenditure data and enhancement of their reliability and comparability, should be continued and intensified. Until appropriate international agreements on their reductions are negotiated, national policies of self-restraint in military expenditures should be encouraged. In this respect it is important that the international system for the standardised reporting of military budgets introduced in 1980 should ensure the objective comparability of military expenditures and desirable that the largest number of States possible should make use of it. It is advisable that this reporting system should make use of national accounting systems. Reliable figures on military expenditures are not only necessary for analysis of the real military burden, but are also an important element in the negotiation and conclusion of verifiable agreements on its reduction.

The arms race continues to have a divisive effect on the world, furnishing the means for transgression of the fundamental provisions of the Charter of the United Nations and undermining international security and conditions for the international co-operation that is urgently required in all the relevant fields underlined by the present report. In this sense, the fulfilment in good faith of the principles of the Charter is both essential and complementary to the process of disarmament and the further release of resources for the needs of development. All these joint efforts are indispensable to reinforce and consolidate collective security, the principles of which are fundamental and irreplaceable instruments established by the Charter for the preservation of international peace and security.

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2. *Joint Declaration by the Panel of Eminent Personalities in the Field of Disarmament and Development* (United Nations publication, Sales No. E.86.IX.5), para. 28 (e).
3. United Nations publication, Sales No. E.87.IX.8, para. 35 (c) (ix) (e).
4. *Ibid.*, para. 35 (c) (ix) (d).

APPENDIX

Military Expenditure and Social Welfare Indicators (early 1990s)

<i>State</i>	<i>HDI rank</i>	<i>Milex-social welfare ratio</i>	<i>Milex/capita</i>	<i>Milex as % of GNP</i>	<i>Public spending on Education (per capita)</i>	<i>Public Spending on Health (per capita)</i>
Canada	1	15	375	2.0	1021	1123
Switzerland	2	14	675	1.5	1392	1432
Japan	3	12	326	1.0	1107	1101
Sweden	4	16	605	2.3	1486	1554
Norway	5	22	712	3.1	1508	1375
France	6	29	781	3.5	942	1140
Australia	7	24	361	2.4	611	696
United States	8	46	1165	5.1	1095	1012
Netherlands	9	22	488	2.5	902	919
Great Britain	10	40	685	4.2	601	663
Germany	11	29	533	2.8	714	959
Austria	12	9	232	1.0	935	890
Belgium	13	20	486	2.3	799	977
Denmark	15	18	530	2.1	1467	1084
Finland	16	15	355	1.9	1190	890
Luxembourg	17	10	296	1.2	1090	1225
New Zealand	18	16	164	1.9	652	631
Israel	19	106	1094	8.6	765	179
Barbados	20	5	34	0.6	479	241
Ireland	21	12	158	1.4	550	600
Italy	22	21	361	2.1	526	841
Spain	23	18	212	1.7	382	443
Greece	25	71	387	5.5	132	201
Cyprus	26	17	580	1.3	234	127
Czechoslovakia	27	17	309	1.6	156	114
Hungary	31	18	128	2.0	139	81
South Korea	32	60	250	3.8	146	14
Uruguay	33	38	81	2.1	71	28
Russia	34	132	976	10.0	166	89
Trinidad	35	9	51	0.6	132	91
Argentina	37	51	127	3.3	87	32
Chile	38	68	83	4.8	48	33
Costa Rica	39	5	8	0.5	81	125
Malta	41	10	54	0.8	201	206
Portugal	42	32	220	3.1	206	175
Singapore	43	129	855	5.8	172	108
Brunei	44	125	1297	9.0	570	90
Venezuela	46	33	107	2.0	101	50
Panama	47	34	32	2.5	96	28
Bulgaria	48	29	172	2.8	165	114

Poland	49	30	202	2.7	72	58
Columbia	50	57	33	2.7	35	10
Kuwait	51	88	2088	6.5	797	739
Mexico	52	5	17	0.3	71	6
Thailand	54	71	49	3.5	72	12
Qatar	56	192	1896	12.5	453	—
Malaysia	57	38	107	3.1	121	29
Bahrain	58	41	546	4.7	324	179
Fiji	59	37	48	2.6	101	36
Mauritius	60	4	9	0.2	73	44
UAE	62	4	850	4.8	351	182
Brazil	63	23	46	1.7	64	46
Jamaica	65	8	11	0.7	71	41
Saudi Arabia	67	151	2230	14.0	408	229
Turkey	68	87	99	4.0	42	20
Romania	72	25	170	1.4	44	34
Syria	73	373	379	16.8	44	5
Ecuador	74	26	24	1.4	29	19
Albania	76	51	56	4.8	60	23
Libya	79	71	551	7.8	421	158
Tunisia	81	31	39	2.9	79	29
Paraguay	84	42	23	1.0	12	4
Suriname	85	27	595	3.8	na	—
Iran	86	38	109	2.1	114	42
Botswana	87	22	128	2.5	125	33
Cuba	89	125	113	12.5	82	43
Sri Lanka	90	107	26	4.8	12	7
Oman	92	293	993	16.4	187	109
South Africa	93	41	99	3.5	117	61
China	94	114	45	5.0	8	4
Peru	95	39	21	2.1	33	7
Dominican Republic	96	22	8	0.8	10	12
Jordan	98	138	130	10.6	102	39
Philippines	99	41	17	1.6	18	5
Iraq	100	271	528	16.0	79	12
Indonesia	105	49	10	1.7	14	2
Nicaragua	106	97	19	9.0	18	6
Guyana	107	21	5	1.9	16	15
Guatemala	108	31	10	1.1	14	12
Algeria	109	11	30	1.6	228	36
Egypt	110	52	27	4.0	40	7
Morocco	111	72	44	4.6	45	8
El Salvador	112	66	37	2.9	16	7
Bolivia	113	57	17	3.1	21	8
Gabon	114	51	144	4.5	160	51
Honduras	115	92	9	6.9	34	24
Swaziland	117	11	15	1.4	77	25

Lesotho	120	48	20	2.4	16	7
Zimbabwe	121	66	30	9.1	67	21
Congo	123	37	61	3.2	52	18
Cameroon	124	48	13	2.1	29	7
Kenya	125	24	6	2.3	21	7
Namibia	127	23	47	2.2	33	44
Papua New Guinea	129	41	14	3.0	34	22
Myanmar (Burma)	130	222	43	6.0	6	3
Madagascar	131	37	3	1.4	6	4
Pakistan	132	125	23	6.5	9	1
Ghana	134	12	2	0.6	15	5
India	135	65	7	3.1	11	3
Ivory Coast	136	14	10	1.2	54	9
Haiti	137	30	8	1.5	6	3
Zambia	138	63	5	3.2	7	5
Nigeria	139	33	3	0.9	4	1
Zaire	140	71	3	1.2	2	2
Yemen	142	197	149	14.4	26	5
Senegal	143	33	13	2.0	25	8
Liberia	144	47	27	3.5	17	7
Togo	145	39	12	3.2	21	4
Bangladesh	146	41	3	1.4	4	1
Tanzania	148	77	4	6.9	8	2
Nepal	149	35	2	1.6	4	2
Sudan	151	44	18	2.0	25	1
Burundi	152	42	4	2.2	8	2
Rwanda	153	25	15	1.5	11	3
Uganda	154	18	5	0.8	10	1
Angola	155	208	116	20.0	44	8
Malawi	157	24	2	1.5	5	3
Mauritania	158	40	16	4.1	23	9
Mozambique	159	121	8	13.0	4	2
Cent. Afr. Republic	160	33	8	1.8	10	7
Ethiopia	161	190	16	13.5	5	1
Somalia	165	200	1	3.0	1	1
Gambia	166	11	6	0.6	11	6
Mali	167	53	7	3.2	7	2
Chad	168	74	12	5.2	4	1
Niger	169	11	4	0.8	10	6
Sierra Leone	170	23	4	0.7	2	1
Burkina Faso	172	30	11	2.8	7	3
Guinea	173	37	5	1.3	4	5

Sources: Columns one, two and four from United Nations Development Programme, *Human Development Report 1994* (Oxford: Oxford University Press, 1994).

Column three from ACDA, *WMEAT, 1993-94*, using 1991 data, or closest available year.

Columns five and six from Ruth Leger Sivard, *World Military and Social Expenditures 1993* (Washington: World Priorities, 1993).

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REDUCTION OF MILITARY BUDGETS

Background

The United Nations has long been concerned with the question of the reduction of military budgets, both as an approach to disarmament and as a step leading to the allocation of greater resources for the purposes of economic and social development, in particular for the benefit of the developing countries. In 1973, the Soviet Union proposed that the permanent members of the Security Council reduce their military budgets by 10 per cent and designate a portion of the monies thus saved for the provision of development assistance, and, on a subsequent Mexican initiative, the General Assembly requested the Secretary-General to prepare a report on the matter with the assistance of experts. While recognising the potential benefits of the proposal, the report noted the difficulty of arriving at a generally acceptable definition of military budgets and of developing a standardised system of measuring and reporting expenditures. Subsequently, in 1976, a group of experts proposed a reporting matrix as part of such a system and suggested that it should be put into operation, tested and refined.

At its special session on disarmament in 1978, the General Assembly reaffirmed by consensus the desirability of reducing military budgets and the need to consider concrete steps to facilitate that process. Accordingly, on the basis of a General Assembly resolution adopted the same year, an *ad hoc* panel of experienced practitioners in the field of military budgeting was appointed by the Secretary-General with the task of carrying out a practical test of the proposed reporting instrument. In its 1980 report, submitted upon completion of the test, the *Ad Hoc* Panel recommended the early implementation of a revised reporting instrument in a general and regular system to be used by all States for reporting their military expenditures to the United Nations. The Panel also recommended further study of the problems of comparing

military expenditures among different States and between different years, as well as the problems that would arise in connection with agreements on the reduction of military expenditures.

On the basis of the Panel's report, the General Assembly, in 1980, adopted an international system for standardised reporting of military expenditures as tested and recommended by the Panel. Subsequently, in annual reports, the Secretary-General has published information communicated to him by Member States on their military expenditures, using the reporting instrument.

At the same time, the General Assembly requested the Secretary-General to carry out the study recommended by the Panel. The Group of Experts, thereupon appointed by the Secretary-General, submitted their report in 1982. It was issued as a United Nations publication (Sales No. E.83.IX.4) and was summarised in Fact Sheet No. 31.

That year, the General Assembly adopted resolution 37/95 B, by which it took note of the study and requested that the Secretary-General, with the assistance of a group of experts, undertake the task of constructing price indexes (instruments for measuring price changes, making it possible to express expenditures of successive periods in terms of constant prices) and purchasing-power parities (instruments for comparing real expenditures among countries) for the military expenditures of States voluntarily participating in this exercise. Thereupon, the Group of Experts on the Reduction of Military Budgets, whose members were drawn from Indonesia, Italy, Nigeria, Peru, Romania, Sweden and the United States, met in six sessions from March 1983 to June 1985 under the chairmanship of Hans Christian Cars of Sweden.

In their report, the experts deal with methodological issues and the collection and treatment of data, present and discuss the results of the study, assess the usefulness of this and earlier studies for future negotiations on agreements to reduce military expenditures, and set forth their conclusions and recommendations.

It may be noted that, parallel to the efforts described above, another activity has been taking place within the Disarmament Commission ever since 1980. In that year the General Assembly requested the Commission to attempt to identify and work out the principles which should govern the further actions of States in the field of freezing and reducing military expenditures, keeping in mind the possibility of embodying such principles in a suitable document at an appropriate stage.

Findings of the Group: Introduction

Group's task of constructing instruments of comparison—price indexes and purchasing-power parities—was to encompass a study of the problem as a whole, and thus to: (a) assess the feasibility of such an exercise, (b) design the project and methodology to be employed, (c) determine the types of data required and (d) construct the instruments of comparison. Eight States—Australia, Austria, Finland, Italy, Norway, Sweden, the United Kingdom and the United States—volunteered to take an active part in the exercise, providing data as requested.

Collection and Treatment of Data

The matrix of the reporting instrument in which military expenditures are broken down into three cost categories: operating costs, procurement and construction, and research and development - served as a basis for the Group's work. The information requested from States participating in the Group's exercise was limited to their fiscal years most closely coinciding with the calendar years 1980 to 1982. For the collection of information, the Group constructed three questionnaires, one for each major cost category.

Operating Costs

As items within this cost category are fairly well known and rather similar in their nature among countries, the questionnaire on operating costs contained precise requests for information on prices and quantities for several specified items in the matrix. The questionnaire covered the following: *Personnel* - conscripts, other military personnel, and civilian personnel; *Operations and maintenance*—materials for current use, maintenance and repairs, purchased services, and rent costs.

The Group received a great deal of relevant and comparable information from all participating States. On the whole, the questionnaire proved to be suitable, although there were initial problems regarding comparisons between national systems' definitions of "conscripts".

Procurement and Construction

Since items procured or constructed in different countries are likely to be much more heterogeneous than those in the category of operating costs, the Group did not specify any particular items in its questionnaire for this cost category. It did, however, specify types of items within most of the sub-subcategories and requested prices and product descriptions for each of them.

The questionnaire on procurement and construction covered the following:

Procurement—aircraft and engines, missiles (including conventional warheads), nuclear warheads and bombs, ships and boats, armoured vehicles, artillery, other ordnance and ground force weapons, ammunition, electronics and communication, and non-armoured vehicles;

Construction—airbases, airfields (landing runways), personnel facilities, medical facilities, training facilities, warehouses, and depots.

The first data received were scarce and difficult in many cases to compare. The experts therefore attempted to collect more comparable data by sending participating States a compilation of information submitted thus far and asking them to find among their national military expenditures items that would correspond closely with those already reported by one or more States. Using this method, the Group was able to improve its data somewhat, although the items remained rather limited and heterogeneous. After carefully examining the data, the experts selected a number of items of equal or similar military value on which to base their calculation of purchasing-power parities for procurement. In their report, they point out that the methodology for establishing purchasing-power parities for procurement is of greater interest than the results themselves, which need further refinement, and that although the data for the category of construction were too heterogeneous to be used, a more specific questionnaire would overcome the problem.

Research and Development

Since there were some precedents in the construction of civilian purchasing-power parities for goods and services similar to those in the military categories of operating costs and of procurement and construction, but none in the category of research and development, the Group decided to approach the problem by collecting data for a sample of items which could constitute inputs into the third category. As the factors were not sufficiently known when it started its work, it constructed a questionnaire for the information it would need in order to select an appropriate sample of inputs at a later stage. Thus it first asked participants for information about the distribution of military research and development expenditures between their military and civilian sectors, the distribution of expenditures in the military sector among different cost categories and the availability of price indexes

for military and civilian research and development. Using the replies to the questionnaire, the Group then selected a number of items and groups of items within the operating cost category and applied appropriate weights to all of them for the purpose of constructing in a simplified manner - both price indexes and purchasing-power parities for military research and development.

Results

On the basis of information submitted, the Group constructed military price indexes for major expenditure categories and for subcategories of operating costs. Table 1 below presents the price indexes constructed by the Group for major cost categories.

The Group constructed purchasing-power parities for participants' military expenditures on two different levels: (a) total expenditures and major cost categories and (b) subcategories of operating costs. Table 2 below presents the purchasing-power parities constructed by the Group.

Usefulness of These Studies for Future Negotiations

The experts believe that it will be necessary for parties to future negotiations to define the concept of "military expenditures" and to agree on what kind of expenditures should be subject to negotiation. The parties will also have to define the concept of "reduction", agree on appropriate rates and determine how expenditures will be accounted for and how and when they will be reported.

Moreover, military expenditures will have to be understood in real terms, taking into account and allowing for the various inflation rates of the negotiating parties. Any agreement, therefore, will need to deal with expenditures in constant prices, and that requirement will grow in importance the longer the period is over which reductions should be carried out. The experts point out that since negotiating parties will have a strong interest in comparing among themselves their levels of military expenditures, not only intertemporal, but also international, comparisons will have to be made. The Group accordingly devoted considerable efforts to determining the difficulties and the possibilities of constructing appropriate tools for international comparisons of military expenditures and tested and suggested a number of methods that might facilitate future negotiations on the reduction of military budgets.

The Group notes that United Nations studies on international and intertemporal comparisons of military expenditures have concentrated thus far on technical - statistical and methodological - issues, although

those issues are closely and continuously related to political aspects. The political aspects, the experts acknowledge, may, indeed, be the fundamental ones. The Group lists a large number of issues of both a technical and political nature that, in its opinion, deserve to be examined. Although operational solutions to such issues may only be reached through negotiation, the experts believe that systematic discussions within the framework of the United Nations may clarify matters and promote progress towards negotiation.

Conclusions and Recommendations

The Group concludes that the construction of military price indexes and purchasing-power parities is feasible. It has found that military price indexes and purchasing-power parities tend to be different from civilian or general price indexes and exchange rates. Since the military measures reflect the real value of military expenditures better than do the civilian measures, their use would be preferable in the context of negotiations. The Group believes that the results it has obtained could be improved if more time and effort were devoted to the selection, collection and evaluation of data. It emphasises that valuable additional experience could be gained if a larger number of countries took part and believes that if more States offered to participate, it would be worthwhile to expand and refine this study.

Although the experts found that most Member States were reluctant to divulge information on characteristics and prices of military goods and services, they feel that parties to future negotiations may be more willing to exchange information among themselves.

The Group points out that its work belongs to a series of reports aiming at the reduction of military expenditures so that resources may be released for economic and social development, particularly to the benefit of the developing countries. Thus, the Group's exercise bears a clear relation to the endeavours made by the United Nations to explore the link between disarmament and development. The Group also states that its work has confirmed the validity of the conclusions made by the preceding Group of Experts (whose report was submitted in 1982 and is referred to on page 3), and points out that although the expert studies carried out so far have been devoted to primarily technical matters, other aspects of the question deserve attention,

On the basis of its conclusions, the Group recommends:

- (a) That the consideration of technical and other aspects of problems related to agreements to reduce military expenditures should

be continued and appropriate measures taken in order to promote and facilitate international negotiations on such agreements;

- (b) That all Member States should be invited to express their views on the report, including the prospects of wider participation, in particular by countries with different budgeting and accounting systems and at very different levels of economic development, as well as on all matters dealt with in the report, and to suggest further steps or measures with a view to promoting and facilitating future international agreements;
- (c) That a report on the above matters should be submitted by the Secretary-General to the General Assembly at its 1986 session;
- (d) That all Member States, in particular the nuclear weapon States and other militarily significant States, should be urged to help create the necessary conditions for fruitful negotiations on agreements to reduce military expenditures and to recognise that, in this process and in the course of such negotiations, a reasonable availability and exchange of statistical data would be required.

The experts express their opinion that on this basis, Member States should start negotiations as soon as possible.

Decisions of the General Assembly, 1985

On 12 December 1985, by resolution 40/91 3, adopted by 113 votes in favour, 13 against and 15 abstentions, the General Assembly noted the study with appreciation, commended it, its conclusions and recommendations to the attention of all Member States and invited them to present to the Secretary-General, no later than 15 April 1986, their views regarding the report and to suggest further measures to facilitate international agreements to reduce military expenditures. It also requested the Secretary-General to make the necessary arrangements for the reproduction of the report as a United Nations publication. By the same resolution, the General Assembly stressed the need to increase the number of reporting States in order to obtain the broadest possible participation, and it reiterated its recommendation that all Member States should report annually to the Secretary-General, using the reporting instrument, their military expenditures for the latest fiscal year for which data were available.

On the same date, the General Assembly adopted, without a vote, another resolution concerning the reduction of military budgets, resolution 40/91 A. In three of its operative paragraphs, it referred to

TABLE 1
Military Price Indexes for Major Cost Categories Constructed by the Group^a
(Index 198 = 100)

Countries	<i>Operating costs</i>		<i>Procurement</i>		<i>Construction</i>		<i>Research and development</i>		<i>Total military expenditure</i>	
	1981	1982	1981	1982	1981	1982	1981	1982	1981	1982
Australia	121.9*	132.4*	109.9	120.8	(112.4)	(125.1)	112.0*	123.6*	119.0	129.8
Austria	106.5	115.7	107.9	116.6	(109.0)	(117.9)	**	**	106.9	116.0
Finland	106.8	118.0	(108.4)	(116.3)	(110.2)	(117.7)	106.5	119.6	107.4	117.4
Italy	131.9	144.8	121.0	143.3	118.6	139.6	120.6	139.1	129.3	144.2
Norway	114.5	125.4	(111.2)	(122.3)	(109.3)	(117.2)	111.8	122.0	113.4	124.1
Sweden	109.4	118.0	112.5	123.5	105.7	111.2	110.6	117.4	110.2	119.1
United Kingdom	117.6	127.9	(109.5)	(118.0)	(112.9)	(112.9)	123.0	131.7	116.7	125.2
United States	110.5	117.4	112.7	131.6	107.7	106.9	109.8	113.8	110.9	120.5

* Based exclusively on submitted salary data.

** No such expenditures reported.

^a Bracketed index numbers are not calculated by the Group, but are either suggested by the contact, in which case they are underlined, or collected as substitute indexes from civilian OECO statistics.

aspects of the question that have been mentioned in this Fact Sheet: (a) reaffirming that the human and material resources released through the reduction of military expenditures could be reallocated for economic and social development, particularly for the benefit of the developing countries; (b) requesting the Disarmament Commission to continue consideration of its agenda item on the reduction of military budgets; and (c) urging all Member States, in particular the most heavily armed ones, to reinforce their readiness to co-operate with a view to reaching agreements to freeze, reduce or otherwise restrain military expenditures.

TABLE 2

Military Purchasing-Power Parities of 1982 as Constructed by the Group^a*(a) For total expenditures and major categories*

<i>Participating States</i>	<i>Operating costs</i>	<i>Procurement and construction</i>	<i>Research and development</i>	<i>Total military expenditures</i>
Australia	1.37	2.60	1.14	1.45
Austria	11.77	51.44	1	13.56
Finland	3.17	9.38 ^b	4.91	4.00
Italy	567	2302	673	679
Norway	6.34	13.36	6.51	7.14
Sweden	6.24	11.63	5.37	7.10
United Kingdom	0.54	1.54	0.49	0.61
United States	1.05	0.89	1.05	1.00

a. Shown at national currency exchange rates as relating to the United States dollar.

b. Based on data only for construction items.

(b) For Subcategories of Operating Costs

<i>Participating States</i>	<i>Military personnel</i>	<i>Civilian personnel</i>	<i>Operations and maintenance</i>	<i>Total operating costs</i>
Australia	2.02	1.02	0.99	1.37
Austria	13.58	7.34	12.97	11.77
Finland	2.49	4.35	4.41	3.17
Italy	493	552	906	567
Norway	5.69	5.51	8.28	6.34
Sweden	6.74	5.81	5.81	6.24
United Kingdom	0.73	0.32	0.57	0.54
United States	1.03	1.15	1.01	1.05

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**MILITARY BUDGET EXPENDITURE
COMPARED WITH OTHER STATISTICS:
ANNUAL AVERAGES, 1973-1975**

The table below is presented in three parts: A. Developed market economies. B. Developing market economies, and C. Centrally planned economies. These data have been extracted from various issues of the United Nations *Statistical Yearbook* and *Yearbook of National Accounts Statistics*, and wherever possible have been supplemented by data taken from replies of Governments to the questionnaire of the Secretary-General dated 10 August 1976.^a

Information concerning military expenditure is contained in the official public accounts of central Governments. Countries differ, however, in their definitions of military expenditure, and information concerning their methods of classification is commonly not available. It is therefore impossible in many instances to determine the content of the official statistics from an economic and social point of view. Some expenditures that would be considered as military from this viewpoint may be excluded from the official data, while others that would be considered as non-military may be included. In addition, there are commonly differences within countries in the basis of pricing of military output as compared with that of the output of the rest of the economy. These differences alone, even if the coverage of the expenditure statistics were appropriate, would make it impossible to indicate with any precision the proportion of resources devoted to military purposes. Furthermore, different countries have different economic structures and patterns of prices, so that in comparing countries one would obtain different ratios of military expenditure to domestic product and its components merely from using the different price patterns. For all these reasons, official statistics of military expenditure have only limited

**MILITARY BUDGET EXPENDITURE COMPARED WITH OTHER STATISTICS
(ANNUAL AVERAGES, 1973-1975)**

A. Developed Market Economies

Country	Currency unit	Gross Military budget expenditure	domestic product at current prices	Gross fixed capital formation	Military budget expenditure as a percentage of		Central government expenditure as a percentage of GDP for	
					Gross domestic product	Gross fixed capital formation	Educ-ation	Health
1	2	3	4	5	6	7	8	9
Africa								
South Africa	Million rand	500.3	22558.7 ^a	6285.3 ^a	2.2	8.0	1.2	0.4
North America								
Canada	Million Canadian dollars	2500.7	143947.3	33343.3	1.7	7.5	—	—
United States	Billion dollars	80.1	1407.0	245.7	5.7	32.6	7.0 ^a	7.5 ^a
Asia								
Israel	Million I: pounds	17946.0	57420.0	17387.7	31.3	103.2	5.0	2.1
Japan	Billion yen	1 002.7	129703.3	43568.7	0.8	2.3	1.4	1.1
Europe								
Austria	Billion schillings	6.3	600.4	165.3	1.0	3.8	3.7	0.2
Belgium	Billion francs	53.6	2047.7	448.7	2.6	11.9	7.0	0.9
Denmark ^b	Million kroner	3327.7	164941.3	36831.0	2.0	9.0	3.9	3.1
Finland	Million marks	1186.3	82981.0	24039.3	1.4	4.9	4.5	2.3
France	Billion francs	38.9	1276.7	306.7	3.0	2.7	—	—

1	2	3	4	5	6	7	8	9
Germany, Federal Republic of	Billion D. marks	30.0	991.1	224.5	3.0	13.4	—	—
Greece ^b	Billion drachmas	22.6	477.0	122: 0	4.7	18.5	1.8	1.0
Ireland ^b	Million pounds	34.0	2581.7	626.9	1.3	5.5	4.5	2.9
Italy	Billion lire	2129.7	97913.3	21264.7	2.2	10.0	3.7	0.2 ^d
Luxembourg	Million francs	704.6	79513.3	22194.0	0.9	3.2	4.2	—
Netherlands	Million guilders	6372.3	186860.0	41170.0	3.4	15.5	7.8	0.3
Norway	Million kroner	4179.0	129426.3	41967.3	3.2	10.0	3.6	0.6
Portugal ^b	Billion escudos	17.3	283.2	56.4	6.1	30.7	2.0	—
Spain ^b	Billion pesetas	69.2	4160.0	989.7	1.7	7.0	1.8	—
Sweden	Million kroner	8294.0	252543.7	54195.0	3.3	15.3	3.9	1.4
Switzerland	Million S. francs	2721.6	136986.7	36886.7	2.0	7.4	1.0	—
United Kingdom	Million pounds	4253.7	85 448.3	17086.3	5.0	24.9	6.1	4.7
oceania								
Australia	Million A. dollars	1301.0	60311.0	14320.7	2.2	9.1	0.4	1.5
New Zealand	Million N.Z. dollars	147.2	9772.7	2398.3	1.5	6.1	3.8	4.1
B. Developing Market Economies								
Africa								
Central African								
Empire ^e	Billion, CFA francs	1.4	57.1	8.9	2.5	15.7	2.8	1.1
Egypt ^b	Million E. pounds	—	3678.7	502.3	—	—	5.2	1.7
Ethiopia ^b	Million birr	99.7	5116.3	573.7	1.9	17.4	2.3	0.8
Gabon	Billion CFA francs	2.8	323.8	142.7	0.9	2.0	1.5	—
Ghana	Million new cedis	61.6	4482.3	390.9	1.4	15.8	3.7	1.5
Ivory Coast ^f	Billion CFA francs	5.6	492.6	102.9	1.1	5.4	—	—
Kenya	Million pounds	15.1	1006.6	206.9	1.5	7.3	4.9	1.6
Lesotho	Million rand	—	75.1	10.6	—	—	4.4	1.7

1	2	3	4	5	6	7	8	9
Liberia	Million dollars	4.0	702.7	134.7	0.6	3.0	2.3	1.2
Libyan Arab Jamahiriya ^f	Million dinars	223.4g	1872.7	453.7	11.9	49.2	3.5	2.3 ^h
Malawi	Million kwachas	2.7	549.9	123.8	0.5	2.2	2.1	1.0
Mauritius	Million rupees	34.5	2828.0	789.3	1.2	4.4	2.3	—
Nigeria ^b	Million nairas	454.4	10523.9	1942.0	4.3	23.4	—	—
Rwanda	Million R. francs	782.4	25542.3	2618.3	3.1	29.9	3.9	—
Senegal	Billion CFA francs	5.5	293.0	48.0	1.9	11.5	3.4	1.3
Southern Rhodesia	Million R. dollars	37.5	1766.0	361.9	2.1	10.4	3.4	1.5
Sudan ^b	Million S. pounds	38.5	1217.9	149.9	3.2	25.7	0.9	0.6
Togo	Million CFA francs	1608.6	114500.0	24600.0	1.4	6.5	2.5	0.9
United Republic of Tanzania	Million T. shillings	434.1	15854.0	3121.7	2.7	13.9	3.5	1.9
Zambia	Million kwachas	54.8	1 372.7	406.8	4.0	13.5	—	—
Caribbean and Latin America								
Argentina ^b	Billion pesos	5.3	360.5	71.5	1.5	7.4	—	—
Bolivia	Million pesos	748.6	33951.7	45193	2.2	16.6	3.7	1.2 ^h
Brazil ^f	Million cruzeiros	8453.6	370 188.0	82241.7	2.3	10.3	0.6	0.1
Chile ^f	Million pesos	18.2	569.2	692	3.2	26.3	3.9	—
Colombia	Million pesos	3150.8	330467.7	60787.7	1.0	52	2.1	0.9
Costa Rica	Million coiones	75.5	13282.3	3 026.0	0.6	2.5	5.3	0.9
Dominican Republic ^b	Million pesos	39.5	2410.5	522.7	1.6	7.6	1.8	0.9
Ecuador ^c	Million sucres	933.0	46 405.0	9 595.0	2.0	9.7	3.3	0.3
El Salvador ^b	Million colones	44.5	3381.7	561.1	1.3	7.9	3.2	1.3
Guatemala	Million quetzals	28.8	3 105.7	467.7	0.9	6.2	—	—
Guyana ^f	Million G. dollars	19.9 ^j	602.3	122.0	3.3	16.3	4.7	2.2

1	2	3	4	5	6	7	8	9
Haiti ^b	Million gourdes	39.5	3034.7	276.0	1.3	14.3	0.6	0.7
Honduras ^b	Million lempiras	32.0	1814.0	324.0	1.8	9.9	3.1	1.1
Jamaica ⁱ	Million J. dollars	12.0	1709.1	471.8	0.7	2.5	4.8 ^h	2.0
Mexico ^f	Billion pesos	3.7	528.1	104.8	0.7	3.5	—	—
Nicaragua	Million cordobas	150.9	9659.0	2145.7	1.6	7.0	2.4	—
Panama ^b	Million balboas	2.2	1535.0	405.1	-0.1	0.5	5.1	—
Paraguay	Million guaranies	2616.9	161298.0	30283.7	1.6	8.6	1.3	0.3
Peru ^f	Billion soles	9.9	305.0	39.7	3.3	24.9	4.1	1.1
Trinidad and Tobago ^b	Million T.T. dollars	8.3	3012.3	640.0	0.3	1.3	3.0	1.8
Venezuela	Million bolivares	1906.0	109303.3	23717.0	1.7	8.0	3.7	2.3
Asia								
Bangladesh	Million taka	446.4	97143.7	10232.7	0.5	4.4	0.7	2.3
Burma ^e	Million kyats	593.2	10772.0	1184.0	5.5	50.1	2.6	1.0
Cyprus	Million C. pounds	6.0	296.3	63.8	2.0	9.4	—	—
India ^b	Billion rupees	16.2	577.3	90.2	2.8	18.0	1.8	0.7
Indonesia	Billion new rupiahs	12.0	9 907.7	1 825.7	0.1	0.7	0.3	—
Iran ^b	Billion rials	93.6	2093.0	404.6	4.5	23.1	—	—
Iraq ^b	Million dinars	173-8	2172.4	345.9	8.0	50.2	3.4	0.8
Jordan	Million dinars	49.3	322.5	72.5	15.3	68.0	3.2	1.3 ^h
Republic of Korea ⁱ	Billion won	181.4	4939.0	1169.0	3.7	15.5	2.4	—
Kuwait ^b	Million dinars	63.9	2301.0	154.3	2.8	41.4	3.0	—
Lebanon ^k	Million L. pounds	145.3	5543.3	1075.7	2.6	13.5	2.8	0.5
Malaysia	Million M. dollars	815.7	20744.3	5085.7	3.9	16.0	5.3	1.7
Nepal	Million rupees	91.3	13154.0	—	0.7	—	—	—
Oman ^b	Million O. rials	61.7	292.9	—	21.7	—	—	—
Pakistan	Million rupees	4372.0	87235.0	11072.3	5.0	39.5	—	0.1
Philippines	Million pesos	1908.4	94869.3	21.705.7	2.0	8.8	1.9	—
Saudi Arabia ^b	Million riyals	3363.0	91705.3	9703.7	3.7	34.7	1.8	—

1	2	3	4	5	6	7	8	9
Singapore	Million S. dollars	616.3	12069.6	4.418.1	5.1	13.9	2.5	—
Sri Lanka	Million rupees	169.0	20930.0	3075.0	0.8	5.5	3.1	1.7
Syrian Arab Republic ^b	Million S. pounds	1289.7 ^j	10927.3	2.217.3	11.8	58.2	3.2	0.3 ^h
Thailand	Million baht	7114.3	259101.0	57165.0	2.7	12.4	3.1	0.5
Turkey ^e	Billion T. liras	8.7	232.1	40.4	3.7	21.5	2.9	0.8 ^h
Yemen ⁱ	Million Y. rials	136.4 ^j	3709.7	384.3	3.7	35.5	—	0.7
Oceania								
Fiji ^b	Million F. dollars	0.7	349.9	64.3	0.2	1.1	2.9	1.6
<i>C. Centrally Planned Economies</i>								
Bulgaria ^k	Million leva	986.3	10.726.7	1700.3	9.0	57.0	—	17.8 ^b
Czechoslovakia	Billion korunas	18.3	382.2	73.3	4.8	25.0	—	—
Hungary ^b	Billion forints	9.8	347.8	70.1	2.8	14.0	3.9	3.3 ^h
Poland	Billion zlotys	43.9	1210.4	354.9	3.6	12.4	5.3	3.9
Romania	Million lei	8764.0	—	—	—	—	—	—
Union of Soviet Socialist Republics	Billion roubles	17.7	351.5	61.1	5.0	29.0	8.9	3.1
Yugoslavia	Billion dinars	15.6	319.7 ^j	92.3 ^m	4.9	16.9	0.8	0.9 ^h

— Not available.

a Including Namibia,

b Data relate to 1972-1974 average.

c Data relate to 1972 only.

d Including labour and welfare.

e Data relate to 1970-1971 average.

f Data relate to 1971-1973 average.

g Including expenditure on general public services.

^hh Including social welfare.

i Data relate to 1972 only.

j Including law and order.

k Data relate to 1970-1972 average.

l Gross material product.

m Gross fixed capital formation.

n Including expenditures by all levels of Government and by private institutions.

value as a basis for measuring the economic burden imposed by the armaments race.

This table includes the most readily available official statistics on military expenditure and compares these with domestic product fixed capital investment, and central government expenditures on education and health. In accordance with usual statistical practice, the concept of domestic product in parts A and B is different from that in part C. In parts A and B domestic product includes output originating in both "material production" and services. In part C domestic product includes output originating in material production only. A further difference is that domestic product in parts A and B is gross, depreciation not having been deducted from gross investment, while material product in part C is net of depreciation. Accordingly, military expenditure is compared with a more broadly defined measure of product in parts A and B than in part C. For more detailed definitions, reference should be made to the United Nations publication, *A System of National Accounts*.

Data on central government expenditures on education and health shown in the table have somewhat limited value for international comparisons owing to the fact that expenditures of regional governments and private institutions in the market economies are not covered, while in the centrally planned economies the national Governments are largely responsible for education and health, so that such expenditures tend to be much more fully covered. Even among the market economies the figures are not strictly comparable for reasons of diverse definitions and coverage.

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THE END OF THE COLD WAR AND DECLINING MILITARY EXPENDITURES

Since the United States adopted the policy of containment in relation to Soviet communism in the late 1940s, its defence policy has rested on two pillars: deterrence of a Soviet nuclear attack on the United States or its allies and the capability of responding quickly to a Soviet and Warsaw Pact blitzkrieg attack on Western Europe. It was felt that if the United States forces could handle such a contingency, they could handle smaller conflicts anywhere around the globe.

In carrying out this policy, the United States has spent, in fiscal year 1991 dollars, about \$8 trillion, or about 7 per cent of its GNP and 35 per cent of its federal budget over the past 50 years (table 1). In addition, it has fought two protracted land wars in Asia, which resulted in the deaths of over 100,000 Americans, and it has employed force “without war” more than 200 times. In many ways the cold war was more costly to the United States than the Second World War.

At the close of the decade of the 1980s, the United States had over 13,000 nuclear weapons in its arsenal and a conventional force of 32 ground divisions, 36 tactical air wings, and 550 ships. Its annual defence budget stood at about \$300 billion and defence expenditures consumed about 6 per cent of its GNP and 25 per cent of its total federal budget. Persons, both civilian and military, working for the Defense Department and persons employed by the defence industry number 6.5 million and account for 5.6 per cent of the total United States labour force.

Although the non-United States members of the North Atlantic Treaty Organisation (NATO) did not spend the same absolute or relative amounts as the United States on defence, their expenditures were substantial—about \$3 trillion in today’s dollars. Since 1950, the NATO nations have spent an average of 3 per cent of their GNP on defence

TABLE 1
Trends in Defence Budget Authority, Fiscal Years 1951-1990
(Billions of 1991 Dollars)

<i>Year</i>	<i>Authority</i>	<i>Year</i>	<i>Authority</i>
1951	296	1971	242
1952	395	1972	234
1953	379	1973	224
1954	233	1974	215
1955	203	1975	208
1956	207	1976	216
1957	216	1977	227
1958	212	1978	224
1959	225	1979	224
1960	217	1980	228
1961	218	1981	257
1962	251	1982	292
1963	254	1983	309
1964	243	1984	329
1965	233	1985	351
1966	279	1986	335
1967	305	1987	322
1968	309	1988	316
1969	298	1989	311
1970	269	1990	303
<i>Non-war-year average</i>			
1954-1960		216	
1961-1965		240	
1973-1980		220	
1981-1990		310	

Sources: Office of the Assistant Secretary of Defense "National Defense Budget Estimates for FY 1989-1990", pp. 61-66, and Lawrence Korb and Stephen Daggett, "The Defense Budget and Strategic Planning", in Joseph Kruzal, ed., *American Defense Annual, 1988-89* (Lexington, Mass., Lexington Books, 1988), p. 45; and Dick Cheney, *Annual Report to the President and the Congress*, January 1990, p. 69.

and have contributed the greater part of the Alliance's ground, air and naval forces.

While it is difficult to calculate the exact amount of roubles the Soviets have spent on defence, it has been quite substantial (table 2 gives CIA estimates). Even Soviet scholars acknowledge that they have spent about 15 to 20 per cent of their GNP on defence over the past 40

years. More important, the Soviets have obtained nuclear parity with the United States and an advantage in most categories of conventional forces. The Soviets too have resorted to force on several occasions during the cold war, most notably to crush freedom and independence in several countries of Eastern Europe and to try to maintain a Communist government in Afghanistan.

Though few realised it at the time, the beginning of the end of the cold war came with the election of Ronald Reagan to the presidency of the United States in 1980 and the death of Leonid Brezhnev, the Chairman of the Soviet Communist Party, in 1983. Ronald Reagan came to office determined to make America No. 1 again and to show the Soviet Union that the United States had the economic might to beat the Soviet Union in an arms race. This tactic might not have worked with Brezhnev, who doubted the willingness of the United States to support sustained increases over the long term and who seemed unaware of the widening economic gap between the Soviet Union and the West. Andropov, the former head of the KGB, who succeeded Brezhnev, knew from his intelligence agents just how precarious the Soviet economic situation really was. Accordingly, he took the first tentative steps towards ending the cold war. However, it remained for his protege, Mikhail Gorbachev, to finish the job. Gorbachev, who came to power in 1985 after the untimely deaths of Andropov in 1984 and Chernenko in 1985, moved rapidly to turn the attention of Moscow towards its own internal problems. He replaced the Brezhnev doctrine of intervention with the Sinatra doctrine of letting each part of the Soviet empire do it its way.

In his five years in office, Gorbachev has removed Soviet troops from Afghanistan, concluded an agreement with the United States on intermediate-range nuclear forces (the INF Treaty); inaugurated the strategic arms reduction talks (START) and talks on the reduction of conventional forces in Europe (CFE); allowed the Eastern European nations to establish their own governments and expel Soviet military forces; and made unilateral reductions in his own forces. The net result of all these changes has been to transform the Soviet Union from an expansionist Power into one focused on holding together its own nation, economically and politically.

The United States, because of its own economic situation and because of the actions taken by the Soviet Union, has begun to reduce the level of its own military expenditures. Between 1980 and 1985 defence spending in the United States grew by more than 50 per cent in real terms. However, beginning in 1986, defence spending dropped by 13.6

per cent in real terms. More important, the United States reduced its planned level of defence spending by \$600 billion, or almost 30 per cent (table 3).

TABLE 2
CIA Estimates of Soviet Defence Spending and Defence as a Percentage of
GNP, 1955-1982, Plus Extrapolations, 1983-1989

(Outlays in Billions of 1970 Roubles)

Year	Outlays	Percentage of GNP	Year	Percentage Outlays	of GNP
1955	30	17	1974	57	13
1956	29	15	1975	59	13
1957	26	13	1976	63	13
1958	26	12	1977	63	13
1959	26	11	1978	64	13
1960	27	12	1979	66	13
1961	30	12	1980	67	14
1962	34	13	1981	68	13-14
1963	35	14	1982	70	13-14
1964	38	14			
1965	39	13		<i>Extrapolations^a</i>	
1966	40	13			
1967	43	13	1983	71	14
1968	46	13	1984	73	14
1969	48	13	1985	74	14
1970	49	13	1986	76	14
1971	50	12	1987	78	14-15
1972	51	13	1988	78	14-15
1973	53	12	1989	78	14-15

Sources: Abraham S. Becker, *Sitting on Bayonets: The Soviet Defense Burden and the Slowdown of Soviet Defense Spending*, JR5-01 (RAND-UCLA Center for the Study of Soviet International Behaviour, December 1985), pp. 4,13; and author's estimates.

a. Based on a 2 per cent real growth between 1976 and 1987, and zero real growth since 1987, as announced by Gorbachev, *New York Times*, 31 May 1989, p. A 10.

It is clear that United States defence spending will continue to decline. Whatever else the political changes in Eastern Europe may imply, they do mean that the United States does not have to be prepared to wage war in Europe with little or no warning. Rather than having to put in place 10 divisions, 100 tactical air squadrons, and a Marine Corps expeditionary brigade in Europe within 10 days, the United

States now has at least six months to respond to a Soviet attempt to move against Western Europe. This will allow the United States to maintain a much smaller active force at a much lower level of preparedness. Moreover, since the United States and the Soviet Union are just about to conclude the START agreement, the United States will not have to continue modernising all these areas of its strategic triad besides moving towards deployment of SDI.

TABLE 3
Department of Defense Five-Year Plans for Fiscal Years 1986-1990
 (Budget Authority in Billions of Current Dollars)

Plan	1986	1987	1988	1989	1990	Total
Administration request February 1985	314	354	402	439	478	1986
Administration request February 1986	281	312	332	354	375	1654
Administration request January 1987	281	282	303	323	344	1533
Actual authorised	281	279	284	290	291	1425

Sources: Department of Defense, *Annual Report*, Fiscal Years 1986, 1987, 1988, 1989, 1990.

Coming on the heels of the Reagan buildup, which left the United States military with a modern well-equipped force, the end of the cold war will allow the United States to cut its military expenditures significantly. President Bush has estimated that between now and 1995 defence expenditures will fall 2 per cent a year or 10 per cent in real terms. Most experts expect Congress to cut the budget by more than 5 per cent per year. As a result, United States defence expenditures in real dollars will be about half their present level within a decade. If this occurs, United States absolute and relative defence expenditures will fall to their lowest level since the Korean War.

Even spending \$150 billion or 3 per cent of GNP a year, the United States will have a robust force. Spending \$150 billion will buy 22 divisions (11 active and 11 reserve), 24 air wings (12 active and 12 reserve), and 400 ships backed by 3,000 nuclear warheads. This will be more than adequate to project United States power around the world and ensure nuclear deterrence while keeping sufficient forces in reserve as a hedge against a reversal of the political changes in Europe. Table 4 outlines the current and future shape of United States defence spending.

TABLE 4
Defense Authority, Fiscal Years 1990-2000
(Billions of FY 1990 dollars)

	1990		1995		2000		Change 1990-2000	
	Amount	%	Amount	%	Amount	%	Amount	%
Military personnel	79	27	63	28	40	26	-39	-49
O & M	87	30	66	29	43	28	-44	-51
Procurement	83	28	56	25	37	24	-46	-53
RDT & E	37	13	36	16	28	18	-9	-24
Other*	8	2	6	2	4	3	-4	-50
Total	292	100	227	100	152	100	-140	-48

* Including construction of family housing and offsetting receipts.

Because of their own economic and political difficulties, as well as a declining military threat from the West, the Soviets will also be compelled to reduce their military burden significantly over the next decade. In May 1989 the United States intelligence community concluded that Gorbachev would reduce the outlays for Soviet weapons by 20 per cent over the next two years. In March 1990, CIA Director William Webster stated that changes in the Soviet Union were irreversible.

While probable, these reductions in military expenditures are by no means inevitable. It will be necessary for the United States and the USSR to conclude the START and CFE agreements and then move on quickly to START II and CFE II. Moreover, it will require the United States and its allies in the North Atlantic Treaty Organisation (NATO) to provide economic and political assistance to Eastern Europe and the Soviet Union to enable them to make the transition from planned economies and authoritarian political systems to market economies and pluralist political systems. Not to provide this assistance will mean not only that the West would not feel able to reduce its military burden, but that it would have squandered the \$12 trillion it has invested to win the cold war. Finally, both the Soviet Union and the United States must develop economic adjustment plans to help their industries move from defence to non-defence areas. Not to do so would provide an incentive to keep defence spending artificially high.

THE END OF THE COLD WAR AND SOVIET MILITARY SPENDING

The bipolar structure of international relations after the Second World War made arms control mainly a Soviet-American affair. The

Soviet-American relationship is of paramount importance to international affairs in the contemporary world. If this relationship is stable and constructive, then our interdependent civilisation has a good chance to survive the nuclear age and the challenges of other global problems created by the gap between rapid technological improvements and slower social progress. But if the United States and the Soviet Union enter a nuclear conflict, they will destroy not only each other but also human society the world over, at least as it is known at present. If nuclear suicide is avoided but nevertheless the high level of ideological tension and the preoccupation with the nuclear arms race persist, that will greatly complicate the solution of the pressing problems of ecology, raw materials, poverty, starvation and disease, solution of which is vital to the survival of the civilisation in the twenty-first century and beyond.

The system of international relations created after the Second World War was based on ideological and military bipolarity. The combination of ideological de-legitimisation of the other side with the threat of nuclear devastation defined the American-Soviet rivalry. The geopolitics of the cold war between the United States and the Soviet Union was based on the notion of the mortal rivalry between capitalism and socialism, with the whole planet as the battleground for their competition. American-Soviet relations were understood as a zero-sum game, in which the interests of each side were seen as contradictory to those of the other.

Ideologies created such dehumanised images of the enemy that "the other side" was considered to be an absolute evil which would understand only the brutal force of nuclear weapons. In the United States the ideological doctrine of containment of communism led to the military concept of nuclear deterrence. The arms race and the creation of a favourable balance of power have become not merely a continuation of American policy, but a substitute for it. For the White House, force became not only a means but an end in itself.

The United States, as the more powerful nation, led the arms race, with the USSR following, and having to react accordingly. This chain of action and reaction (sometimes over-reaction) created the conditions of "mutually assured destruction" and strategic parity. Nuclear deterrence became mutual and the United States lost its historic invulnerability to a foreign military threat.

For many years, arms control was blocked by the different perceptions of the notion of security on the part of the Soviet Union

and the United States. In Russian the word translated as “security” means “absence of danger”; while in English the term means “guarantee against danger”. In the 1950s and 1960s the Soviet Union supported complete disarmament while objecting to “arms control without disarmament”. The United States was more interested in verifiable partial measures than in disarmament.

The problem is how to reconcile the two approaches. In the 1970s the USSR accepted the idea of partial limitations, which made it possible to reach the SALT I and SALT II agreements. But these limitations failed to reverse or stop the arms race. That brought on another round of the cold war in the early 1980s.

The conditions of mutual deterrence led to recognition of a common interest in regulation of the military competition, an interest which led in the early 1970s to a number of formal agreements on “the rules of the game”, aimed at maintaining the stability of the military balance. Strategic arms limitation coupled with the ABM Treaty did not stop the arms race, but channelled it in less threatening directions. As a result, the detente of the 1970s brought stability in the arms race rather than the intended strategic stability.

While diminishing the danger of a nuclear war between the United States and the USSR, detente did not prevent their involvement in regional conflicts. The ideological bipolarity projected their competition into numerous conflicts in the third world, with an inevitable backlash on Soviet-American bilateral relations. The geopolitical notion of the linkage between regional conflicts and arms control undermined the structure of detente. The lesson of the 1980s proved once again the dangers of re-ideologisation and re-militarisation of Soviet-American relations. The source of danger is ideological and political competition between the two countries. Thus, security is first of all a political and not a military problem.

In the military sphere the balance of forces used to be the means of security. It is possible to have a defensive balance, when the conventional forces of both sides are sufficient for defence of their territory, but not for offence; but this is impossible with nuclear forces, which have absolute power of destruction. Thus for both sides a nuclear war is the main danger—a danger which will remain as long as nuclear weapons exist.

The principal interest of each side—namely survival—cannot be realised unilaterally. This implies interdependence as regards security,

and the instinct for self-preservation can be realised only as a matter of mutual interest.

The bipolar military structure is an anachronism in the existing conditions of increasing economic and political multipolarity and diversity. Both the USSR and the United States are interested in an orderly transition to an interdependent multipolar world—and that demands demilitarisation and de-ideologisation of the Soviet-American relationship.

Gorbachev's new political thinking led to a new conclusion regarding security, one which recognised that the present high level of the nuclear balance ensures mutual danger. Real security in our age would be ensured by the lowest and not the highest level of strategic balance, which would therefore not include nuclear and other weapons of mass destruction. This would require a continuous process of arms reduction, until a nuclear balance would be reached at the lowest possible level.

The complete elimination of nuclear weapons is not an immediate task but should be kept in mind as the end-point. It can become a practical task only after a comprehensive system of international security is established, which demands a co-operative shift to a nuclear balance at the lowest possible level between the United States and the USSR (minimal nuclear deterrence) and to defence sufficiency by NATO and the Warsaw Treaty Organisation. But the most important task is to realise the potential of the United Nations, which was created as the global security mechanism. The normalisation and stability of Soviet-American relations will make it possible to realise the Organisation's potential. The problem of United States and USSR security can be discussed on three levels.

Soviet-American Mutual Security

Soviet-American security has nothing to do with the kind of military alliances that American mutual security treaties establish. Nor is it a traditional adversarial relationship. It should be a co-operative relationship in which neither side is interested in creating too great a threat to the other side.

Strengthening Strategic Stability

The task of strengthening strategic stability demands the elimination of destabilising strategic systems, while continuing the process of numerical reductions after the strategic arms reduction talks (START) (50 per cent reduction plus negotiations for another set of 50 per cent

reductions). As long as counter-force weapons continue to be deployed, the continuation of negotiations for further reductions may be impossible.

Mutually Agreed Minimal Level of Nuclear Deterrence

The mutually agreed minimal level of nuclear deterrence may vary from several hundred to several thousand strategic nuclear warheads. The numbers depend on several factors, among them:

- An unacceptable damage factor;
- The question whether there is a retreat from counter-force postures;
- The vulnerability of retaliatory forces;
- The capabilities of third nuclear Powers;
- The “nuclear winter” factor;
- The reduction of conventional forces.

Limitations on Strategic Defences

Strategic stability must encompass both offensive and defensive weapons. They should be treated as a system in which all components depend on one another. After START-I this interdependence has to be protected through the following measures:

- Strengthening of the ABM Treaty;
- Limits on strategic air defences linked to limits on air-breathing systems, including cruise missiles;
- Limitations on anti-submarine warfare (ASW) against strategic submarines;
- A ban on anti-satellite weapons (ASAT).

Establishment of Transparency: Glasnost in the Military Sphere

The co-operative regime of security should lead to the elimination of unnecessary and counterproductive secrecy, which only fuels mutual suspicion. This regime may include:

- A joint system of verification;
- A network of centres for the control of military activities;
- Control over testing of new strategic and improved conventional weapons.

Control of Military Production and Conversion of Defence Production

The problem of control of production will become increasingly important at lower levels of weapons. Even the most sophisticated system of verification of arms reductions would not completely exclude

the danger of cheating and secret stockpiling of weapons. There is also a possibility of a sudden breakthrough in new weapons development.

To deal with such problems it is necessary:

- To have a regular exchange of information on military production and research and development;
- To establish on-site inspection of the most important types of defence technologies;
- To develop parallel plans of conversion of key defence industries;
- To organise co-operation in conversion of similar production processes for civilian purposes;
- To develop, jointly, safe ecological technologies utilising the potential of the defence-oriented economic sectors.

Establishment of the Mutual-Security Mechanism

Establishment of a mutual-security mechanism would require:

- Institutionalisation of the negotiation process;
- Mutual assessment of the greatest threats;
- Mutually accepted criteria for the deployment of new weapon systems (negotiations before, not after, deployment).

Evolving the Security Systems of NATO and the Warsaw Treaty Organisation

The drastic political changes in Eastern Europe and the progress at the Vienna negotiations are opening the way for the building of the common European home, which would overcome the inter-bloc confrontation and create a new security regime in Europe.

Shift to Common Principles of Defensive Doctrines

The entire range of defence activities of the European countries has to be restructured to meet the criteria for defensive sufficiency. That requires a solution to the problem of conventional deterrence which would eliminate excessive offensive capabilities while deterring a surprise attack. Deterrence by denial of the prospect of victory (not by fear of punishment) leads to non-offensive defence, which allows for protection of one's territory but does not allow for domination over the opponent's territory.

Asymmetrical Reductions of Forces

The purpose of the Vienna talks after equal ceilings are reached for NATO and WTO should be the dismantling of the mechanism of military

confrontation between East and West (without an early disbanding of the two alliances) in order to achieve a general military balance in Europe (Vienna II). That requires not only reductions of forward-deployed forces of the two super-Powers, but also a co-operative approach to the problem of fast reinforcement. The problem of the mobilisation of resources must be tackled also. After the elimination of disparities the Soviet Union and the United States will probably discontinue their large-scale military presence in Central Europe, although their symbolic presence may be needed for some time after that as a commitment to stability and peace in the region.

After the Vienna I talks bring about a more stable configuration of ground forces, some new approaches towards naval limitations will be needed.

Special Regime Zones

The concept of mutual confidence-building measures allows for a wide variety of steps aimed at greater trust among all the parties concerned. These may include “disengagement zones”—zones that exclude specified offensive weapons or zones of limited military activities.

The solution of the German problem and the signing of the German peace treaty which will probably be the result of the two plus four interaction will create a set of arrangements that will permit German unification. The German process and accompanying four-Power understandings should be linked to the CSCE process in Vienna and to further agreements on lowered troop ceilings for Central Europe.

Mechanism of Interaction between NATO and WTO

The European process (directed towards developing a common European home) should lead to a regional security system, surpassing the old bloc relationship. NATO and the Warsaw Pact may survive in a modified form, but with less military and more political roles. It is also possible to envisage direct contacts between the military organisations of the two alliances and a linkage to the bilateral Soviet-American mutual security mechanism.

The USSR, the United States and Comprehensive Global Security

The end of the cold war gives rise to the need for “rules of behaviour” in regional military activities. Such rules should include:

- No direct involvement of the United States and the Soviet Union in regional conflicts;

- The end of subversive and paramilitary activities against legitimate governments;
- Limitations on the military presence of the super-Powers in the third world.

While the USSR and the United States cannot impose their political solutions on regional conflicts, they can help in creating positive conditions for negotiations between the parties, leading to such solutions.

The Arms Trade Problem

The new Soviet-American interaction can be conducive to the prevention of an intensified arms race in the third world. Their co-operation in limiting the arms trade is needed even more in light of the forthcoming force reductions discussed by NATO and the WTO, which would release tremendous arsenals of weapons from Europe. The Soviet Union and other Warsaw Pact countries will have to remove from their arsenals about 40,000 tanks, more than 42,000 armoured personnel carriers (APCs) and about 50,000 artillery systems. NATO will have to give up a smaller number of weapons, though a number that is still enormous by third world standards. Urgent negotiations are needed to prevent attempts to dump those arms in the third world.

Other measures may include:

- Co-operation in helping to develop regional plans for arms control (taking advantage of the experience and methods of Soviet-American and NATO-WTO agreements);
- Control of missile technology trade;
- A ban on chemical weapons.

Of special importance is a new effort to strengthen nuclear non-proliferation, as more States are reaching the nuclear threshold.

Strengthening the UN Peace-Keeping Role

The new Soviet-American relationship may help to give a boost to the Security Council and its original purpose of maintaining international peace and security. It may even become possible after 45 years to review the role of the Military Staff Committee and create more efficient tools for the international community. While direct American and Soviet military involvement is hardly advisable, the United States and the USSR can provide transport and logistical support for the United Nations peace-keeping operation besides ensuring the necessary political support. The USSR and the United States can also play a crucial role in solving

the problem of financing peace-keeping operations. Together with others they can contribute to the establishment of a global system for monitoring the implementation of agreements in the field of international peace and security.

Military Spending

Until 1989 the Soviet Union did not provide much information about its military forces and its defence budget and this prevented any serious discussion of comparative expenditures. The official Soviet figures of 17 billion to 20 billion roubles per year were not believed. The enigma of the Soviet defence expenditures was widely debated in the West. In the 1970s and 1980s the CIA, using so-called dollar estimates of the Soviet military budget based on the dollar cost of production of identical military items in the United States, claimed that the USSR was spending much more than the United States—up to 15 to 17 per cent of its GNP.

For the past year, however, the USSR has provided basic information about its military forces. In 1989 it was announced that the Soviet military force (not counting internal troops, border guards and railway troops) had 3,992,000 soldiers.

According to the official Soviet figures, at the beginning of 1989 the strategic forces of the Soviet Union comprised 2,484 strategic launchers: 1,398 ICBMs (760 of them with MIRVs); 924 SLBMs (440 with MIRVs); 162 heavy bombers (97 with ALCMs).

At the same time, the Soviet Union maintains and produces a large number of conventional weapons—in 1990 it has 8,207 combat aircraft in tactical aviation, 4,014 combat helicopters, 1,723 tactical missile launchers, 63,900 tanks, 76,520 APCs, 66,880 artillery guns, 260 general-purpose submarines, and 157 large surface combatants.

Such huge military forces allowed the USSR to maintain parity with the United States and its allies in Western Europe and the Far East. The perception of a threat involving the so-called “encirclement” of the Soviet Union led to very heavy investments in defence. Today, many in the USSR believe that it was an over-reaction. At present there is a lively debate among the Soviet people about the scope and the structure of military forces needed for defensive sufficiency of the Soviet Union.

The burden of maintaining present military forces is rather heavy for the Soviet economy, although the Western estimates turned out to

be high. According to the official Soviet figures, the military spending covered 8.5 per cent of the GNP and 12.1 per cent of the national income of the USSR in 1989, and 7.5 per cent of the GNP and 11 per cent of the national income in 1990. The Soviet Government wants to reduce the share for defence in the national budget-by 50 per cent by 1995.

Such huge expenditures on defence are a heavy burden for the Soviet economy. Table 5 proves that the Soviet Union is implementing its decision, announced by Mikhail Gorbachev in December 1988 at the United Nations, to cut its military expenditures by 14 per cent and the military production by 19.5 per cent. The 1990 defence budget is 6,318 million roubles lower than the 1989 budget, a reduction of 8.2 per cent. In 1991 it will be reduced to 67.3 billion roubles at current prices. The expenditures for procurement were reduced in 1990 by 1,557 million roubles or 4.8 per cent. Taking into account inflation, the real reductions will be even more drastic. For instance, the cost of aircraft, according to the Chief of Staff of the Air Force, Lieutenant General Pozdnyakov, increased 1.5 to 2 times in recent years.

TABLE 5
Defence Expenditures of the Soviet Union
(Billions of Roubles)

<i>Title</i>	<i>1989</i>	<i>1990</i>
Military procurement	32.6	31.0
Research and development	15.3	13.2
Operation and maintenance of the military forces	20.2	19.4
Military construction	4.6	3.7
Military pensions	2.3	2.4
Other	2.3	1.3
TOTAL	77.7	71.0

Source: Krasnaya Zvezda, 1 February 1990.

The differences in geostrategic positions, traditions and military doctrines produced serious disparities in the Soviet and American defence budgets. Of course, the United States spends much more on defence. According to the Secretary of Defense, Dick Cheney, the Pentagon outlays for fiscal year 1990 total 286.7 billion dollars while the budget authority will be even bigger—298.7 billion dollars. But since the United States economy is much bigger, the expenditures of the Department of Defense make up only 5.2 per cent of the American GNP.

The non-convertibility of the rouble still makes it difficult to compare Soviet and American defence expenditures. The dollar estimates of the CIA tend to give a gross exaggeration of the Soviet expenditures, because they do not take into account the low cost of labour and *materiel* resources in the USSR.

Table 6 gives a comparison of the main components of the Soviet and American defence expenditures in 1990.

TABLE 6
Structure of Soviet and United States Defence Expenditures (*Percentage*)

<i>Title</i>	<i>United States</i>	<i>Soviet Union</i>
Military procurement	27.14	43.70
Research and development	12.83	18.60
Military construction	1.99	3.76
Housing	1.14	1.47
Operation and maintenance	29.19	17.65
Military personnel	26.77	9.57
Pensions	(7.07)	3.44

Sources: Dick Cheney, Secretary of Defense, Annual Report to the President and the Congress, 1990, p. 69; *Krasnaya Zvezda*, 1 February 1990.

As table 2 demonstrates, there are important differences in the allocation of the Soviet and American defence resources. The investment part takes almost two thirds (67 per cent) of the USSR military budget, while the United States spends only 43 per cent of its budget for this purpose. On the other hand, supporting (current) expenditures take only 33 per cent of the Soviet, but 57 per cent of the American defence budget.

To some extent these differences can be explained by the fact that American military forces are professional, whereas the bulk of the Soviet military forces consists of conscripts who receive only a token salary. That is why the USSR spends much less for military personnel than the United States, although the Soviet Army is twice as large (3,993,000) as the American active military component (2,077,000 without civilian support staff and military reserves). In 1990 the USSR will spend only 5,765 million roubles for the salaries of its military personnel, 1,032 million roubles for the salaries of civilian personnel working for the Ministry of Defence, and 2,440 million for military pensions.

Changing Priorities

The political changes in the relations between the East and the West and the new thinking allow for a radical change in national priorities. Already in 1990 several important arms control agreements may lead to drastic reductions in strategic and conventional weapons. A Soviet-American agreement on strategic arms reductions of 50 per cent would probably lower the ceilings for launchers to 1,600 and for accountable warheads to 6,000. Even greater savings will come from the Vienna agreements on conventional arms. Additional savings may result from the Soviet and American reduction of troops to 195,000 troops in Central Europe.

The end of the cold war and the deep cuts in strategic and conventional weapons may eventually result in savings of many billions of roubles and dollars. It would seem that some of those savings could be assigned to the United Nations efforts to solve global problems. If the greater political co operation between the USSR and the United States (and between East and West in general) is accompanied by a greater willingness to allocate a small portion of the savings for the United Nations peace-keeping operation, that may open a new era for global peace and international security.

THE MATERIAL AND NON-MATERIAL DIMENSIONS OF FUTURE GLOBAL SECURITY NEEDS

Profound changes in political and military affairs in the world context are usually a result of violent conflict, and a new world order can often emerge as a consequence of major international confrontation. Most countries then assign great importance to their own security concerns and to maintaining stable international relations.

Security and defence have traditionally implied that a country has the ability to use—initially—armed coercion and—ultimately—direct military power to dissuade, neutralise or improve its relations with another State. A study of the changes in the use of armed coercion provides the backdrop for the evolution of strategic thought, ideas and concepts. There has been a change in the nature of military power over the years. The changes have been both material and non-material. Every time new technological developments have changed the basic elements of time, space and fire-power as used on the battlefield, the scope of action of armaments has also changed. New strategic doctrines have had to be enunciated to take account of the material changes.

By the same token, when there has been a change in the political context in which armaments were used, this has also caused profound changes in the strategic concepts of nations. These political changes might apply to the establishment of a new world order (for example, as a result of global confrontation) or to the proscription and limitation of the use of military force (for example, by declaring wars of conquest illegal). Moreover, the relationship of the military as a body to the rest of society has also undergone changes, as can clearly be seen from a study of the evolution of the role of the military in contemporary politics. Thus, in some countries, the military itself has become a threat to the security of its own nation when it has intervened in internal politics and government.

Policies and Strategies

Military strategy, in its basic form, is nothing more than the practical application of existing military means to the achievement of a policy. Hence, strategy is about means, and policy is about ends and objectives. Likewise, strategy presupposes the existence of an opposing will. If this were not the case, then policies could be applied automatically and would not require a plan of action to put them into force.

Political change, therefore, often brings about changes in the security perceptions and needs of nations. As security is closely associated with the military, issues such as military expenditures, the influence of the military-industrial complex, civil-military relations, and the enunciation of strategic doctrines all change accordingly. But despite this action-reaction effect between changing policies and strategies, it is often difficult to foresee whether any major international change will lead to a more, rather than a less, secure world in general.

For these reasons, disarmament does not automatically do away with conflict. Nor does a policy inclined towards peace produce an absence of war. Conversely, neither does a policy and strategy of deterrence through the threat of the use of force nor an arms race produce, ultimately, a stable and more secure world. The history of mankind bears ample testimony to this fact.

Underlying Causes of Change

Today, one such moment of history is unfolding before our eyes. Political and security needs have begun to change in the last five years. Surprisingly, these changes have not been the result of violent conflict. In the course of 1989 the world was amazed at the rapidity and scope

of largely peaceful political changes. This time, fortunately, these changes seem to be opening an era of reduced rather than increased international tension.

For the first time in decades, East-West disarmament talks seem to be prospering and international co-operation is increasing. But have these changes come about because of a realisation that peaceful co-operation is the road to follow? Or have they come about as a result of impotence and of the inability to continue with past policies?

This question is important, not only from a political viewpoint, but also when applied to military issues such as disarmament: Does disarmament occur because of a definite will to lower the tensions among nations? Or does it occur as a result of the sum of peripheral issues such as economic problems, inability to sustain an effort, or the need to divert power to other issues? To understand and assess the future global security needs, it is of crucial importance to differentiate between these two attitudes.

The East-West conflict has influenced the course of politics in the international arena for almost half a century. The ideological, economic and military competition between two camps that have been clearly opposed to each other since the end of the Second World War has marked not only the relationship between East and West but also the relationship between North and South that has been emerging since the decolonisation era ended in the 1950s and 1960s. In the East-West dimension, the arms race was the main factor. In the North-South dimension, economy and development have become the major issues.

In the second part of the 1980s three major international issues came to the forefront: political and social changes in the Soviet Union, serious economic problems in both East and West, and new perceptions of threat coming from the South, such as drug traffic, social disruption and developmental paralysis, not to mention international terrorism. Of these, the only threat perception that was shared by all parties concerned was that of the mounting economic problems impinging on future projections for the United States and also for the Eastern bloc, some countries of the Western European bloc and most developing countries.

Unlike the United States Administration, which proceeded to re-arm at the end of the 1970s and in the first half of the 1980s, the Soviet Union's changed leadership initiated a process of relaxing tension and made a positive move towards disarmament during the same period.

Eventually, economic pressures, together with the new political spirit in the Soviet Union, led other countries of the Eastern bloc to undergo similar changes. The lessening of tension prevalent in the last part of the 1980s also influenced the masses of Eastern Europe to strive for radical changes in their societies. In an analysis of the timing of these changes, the role of the media should not be underestimated. In some cases, the timing induced by external influence (through the media for example) and by internal movements proved negative, as was the case in China in 1989. In other cases, the relaxation of border controls, together with a better knowledge of the options open to the people, led to gradual shifts and changes that gathered momentum towards the end of the year, as was demonstrated by events in the German Democratic Republic, Czechoslovakia and Romania. Spearheading the changes since 1985, Hungary and Poland consolidated their gains and pressed the advantage. Today, Bulgaria, and Albania as well, and also a number of Soviet Republics are all undergoing fundamental changes in their structure.

In the process, the concept of “friend or foe” has begun to change in both the East and the West. Disarmament negotiations at all levels—nuclear, chemical and conventional—have gained new impetus. In some cases, over-confident countries in Western Europe have begun to introduce important demobilisation policies without waiting for the outcome of specific conventional arms reduction negotiations.

In other cases, countries such as the United States have suddenly found that they can cut their military budgets in view of the relaxation of tension and thus concentrate on more important, immediate problems such as drugs (both traffic and abuse) and socio-economic domestic problems.

Thus, the old, overt military alliances and their capabilities have suddenly come under scrutiny and much has been done to reorganise their structures in keeping with different objectives. Self-defence rather than deterrence seems to be the rationale for the maintenance of military capabilities under NATO. Much more serious is the future of the Warsaw Treaty Organisation, an issue that is no longer a military one but almost a purely political factor. The solution to this problem will therefore emerge as a result of political needs much more than of military realities.

East-West and North-South Reactions to the New International Climate

Meanwhile, what has happened to the two major world military Powers? What are their objectives and how will they restructure their

military capabilities to suit the new situation? Paradoxically, the new international climate has not changed the underlying motivations or trends in the use of military power at this level.

Both the Soviet Union and the United States have revised their military policies in such a way as to give a higher priority to the control of their own domestic problems. This is clear in the Soviet Union's demobilisation in Eastern Europe and Afghanistan and its concentration of forces for the internal control of political and social unrest in its own republics. By the same token, the United States has opened the decade with major acts of military intervention in Latin America under the justification of a "war on drugs". Doctrines of "low-intensity conflict" are now being applied by both of the super-Powers.

Coincidental with this approach by the super-Powers to the use of military power, other problems are beginning to generate trends that will affect long-term military projections for the world. In this sense, economic imperatives are dominant. Powers outside the orbit of the European Economic Community are worried about their economic future after 1992 and have begun to open new forms of co-operation with countries in potential growth areas such as the Pacific Basin.

The competition among countries outside Europe to influence Eastern Europe's economic development is likewise designed as a means to seek new markets and, more important, to obtain a foothold in European economic processes by entering through the back door.

For countries in the South, this search for markets has also encouraged a re-evaluation of their own potential resources. This means that with the uncertainty of economic markets for the future, many countries are consolidating their control over their own territories both on land and at sea so as to be in a position to prevent any future exploitation of such areas. Thus, these countries wish to defend their potential resources from all competition.

It is safe to assume that the possibilities for traditional East-West disarmament negotiations will be enhanced by the political and economic developments described above. Unfortunately, these trends are not a response to a clear political will for co-operation rather than competition: they are the result of an inability to sustain the military and economic efforts of the last forty years.

In this sense, although we are experiencing major advances in disarmament talks, we are not experiencing the same level of progress in co-operative modes or in joint programmes for using the military

and technological capabilities of nations to solve common problems. By the same token, the insecurity with regard to the future perceived by most third world countries is not conducive to the success of global disarmament efforts.

Today two issues in which international co-operation is not only necessary but unavoidable are protection of the environment and North-South interaction. Yet there is no clear political will to embark on mature scientific, economic and technological co-operation in these two areas. The result is that despite the new easing of East-West military tensions, there has been no parallel easing of tension in the dealings of industrialised countries with less developed ones or in the forming of a working relationship for the solution of global security threats such as those pertaining to the environment and the economic disintegration of many countries. If one adds to these problems the need for the transfer of technology, the issue becomes even more complex since the will to co-operate at the North-South level is not seen as a priority.

As regards disarmament, though this is continuing with regard to specific issues in East-West relations (particularly in Europe), the same does not apply to the issue of arms transfers to the third world, nuclear non-proliferation, or the eradication of violence world-wide. The industrialised nations have a very powerful military industrial complex that will be looking for new areas in which to prosper if and when their own countries stop major production of weapons for their own regional security. Thus, issues such as conversion, arms transfer regulations, and codes of conduct for technological transfer from North to South are not experiencing the same level of interest as disarmament talks *per se*.

To make the future security needs of the world even more complex, the countries of the so-called South are becoming increasingly concerned at the prospect that industrialised countries may abandon their responsibility, encouragement and support in their regard. African countries, for example, are suffering not only from day-to-day violence but also from famine, the disintegration of their infrastructure, extensive environmental degradation, including desertification and deforestation, and finally, from the belief that their own economic and financial worries will enter into competition with the development of the newly democratic countries of Eastern Europe.

For the more developed countries such as those in Latin America there is also the fear that the markets they hope to gain will close on them and that the aid and understanding related to their own economic

and financial problems will suffer *vis-a-vis* Eastern Europe. In some cases, in Central America for example, there is even mounting fear with regard to the possibility that the United States may use its military resources and the lack of competition from the East in order to engage in direct military interventions in their region.

No negotiations are under way for effective disarmament steps affecting North-South problems. Indeed, no negotiations are under way at the North-South level either for solving economic and financial problems or for joining forces for the protection of the environment.

More important, the last decade has witnessed considerable progress in the countries in the South. This has come about, again not so much because of a definite political will, as because of a lack of other options. Nevertheless, military governments in most third world countries suffered major set-backs during the 1980s, and there has been a return to democracy on all continents. Precisely now, when these countries of the South are democratic and striving to consolidate their systems and create workable governmental infrastructures to provide economic alternatives, they feel they are ignored by the industrialised nations, either because the latter are more concerned with their own level of economic prosperity or because they are dazed by the rapidity of change in Eastern Europe and by the lack of competition world-wide between the capitalist and communist systems in the last few years. This last factor did make possible even the negotiated and peaceful solution of political problems such as those of Namibia and Afghanistan, and the negotiations under way in Cambodia but, paradoxically, it has done nothing to enable fragile democracies to consolidate their systems and help their societies towards development.

Uncertainty with regard to future options, fear of enforced isolation and mounting economic problems are all affecting third world nations today. If we analyse this in terms of disarmament, it follows that countries are not secure enough to embark on comprehensive disarmament processes at this time. The insecurity with regard to their future relationship with the rest of the world, and the mounting internal problems they face, such as drug traffic and power sharing, not to mention the defence of future natural resources, will not permit any major advance in a comprehensive disarmament policy affecting all countries. Conversely, if there is to be a dialogue between North and South on such issues, confidence should be built up first so as to allow for much more dramatic disarmament decisions.

Perhaps the real problem behind the current North-South, East-West relationships is the need to find common interests and needs. Not much effort has been devoted to this end and yet, perhaps, never before in recent history have there been so many common areas and problems between North and South as there are today. In fact, even the definition of developed and under-developed countries should change, as can be seen by comparing some third world countries—such as the Latin American and some African nations—and the emerging nations in Central and Eastern Europe.

Facing the Global Economic Crisis

We must first understand that the world is facing a global economic crisis and therefore no one country can solve the economic problems of any other. Nor can any country solve its own economic problems alone. For this reason, both so-called developed and underdeveloped nations face the same kind of underlying economic problem. What then can differentiate nations today from the developmental point of view? This difference is increasingly marked by a nation's ability to organise itself internally in order to survive and to sustain development. This capacity depends not only on resources but on governmental infrastructure, consolidation of democratic systems and the efficient use of the institutions in a State: efficient governmental and non-governmental organisations as well as efficient civil-military relations.

Since the old democratic systems are no longer economic Powers as such with unlimited capabilities, it follows that the support they can provide for development should be more in technical assistance than in financial aid. Recent democracies of both South and North need to understand this and apply their own organisational and strategic planning. They need to cement inter-agency communications and an efficient civil service and bureaucracies (devoid of corruption and cost-efficient). They need to rebuild confidence among the different sectors of society, and they need to have non-governmental organisations and also efficient communications between these and the government, as well as between the civilian and military elements of society.

Technical assistance with a view to consolidating systems is the one thing that “developed” countries of the North could offer at cost. Had this been understood and provided when Latin American nations and other third world countries progressed into democracy in the decade of the 1980s, then the industrialised countries of the North would today have had the experience needed to help guide the same processes in contemporary Eastern Europe.

Thus an underdeveloped nation is defined today as one where there is no consolidation of governmental systems, where democratic patterns of behaviour are fragile, where inadequate economic infrastructures exist, and where there are no confidence indices between the different sectors of society. In such a society, it is not possible to obtain cooperation to sustain economic changes or to move forward in the country's recovery. Under this definition of under-development, the differences between a range of countries in Latin America and Eastern Europe fade away.

Disarmament: The Cause or Result of Peace?

Disarmament can be the cause or the result of peace, but there can be peace only when competition is limited and co-operation pursued. And the first step towards co-operation is the identification of common problems. We have common problems between North and South and East and West: environment, nuclear proliferation, consolidation of nation-State structures, and economic crises.

Clearly, disarmament should help liberate nations to deal with these pressing problems but this could happen only as part of an umbrella negotiation in which co-operation among all parties is manifest and where confidence in such co-operation is boosted. If this does not occur soon, then the lack of identification of common problems will tend to separate rather than unite countries and regions and a resumed arms race will be the result.

The lessening of international East-West tension promotes disarmament processes. This is certainly the case in the European context, and—by its effect—it also helps towards the reduction of national military levels in the case of global Powers such as the USSR and the United States of America. By reducing the level of armaments in Europe, the Eastern European countries will find an easing of their economic problems even if only to the extent that the crippling effect of the arms race will be lessened so that resources can more readily be reallocated to development and financial recovery. For Western Europe likewise, a respite in the arms race can help concentrate efforts in the economic and social integration processes that are under way. Both the United States and the Soviet Union can only benefit by having their commitments to the defence of Europe reduced, leaving them free to concentrate their efforts on their own domestic situation and on efforts to set examples that can influence trends in other regions of the world.

Both Eastern and Western Europe can find a positive alternative to the arms race without lessening their security for the future. In Western Europe this is possible because the countries involved have organised societies that had begun integration processes many decades ago, thus sharing in their own regional defence and making a bid for a concerted economic future. The high degree of organisation and of cooperation evidenced in these nations also helps maintain order within their Societies, which in turn provides stability. By reducing the international military tension in the region, the countries can apply their energy to the consolidation of trans-border co-operation and integration. This co-operation is beginning to extend to Eastern Europe and the ingrained stability of the Western European political and military scenario provides a suitable backdrop against which Eastern European countries can initiate their processes of nation-building. In a very important way, these countries benefit by having Western European countries as their neighbours since this offers a stable international context, which assures them support and lessens the probability of instability that, all newly emerging nations face during the early stages of nation-building. Threats are therefore reduced, stability is enhanced, and the reduction in military expenditure can readily be applied to development. The strength of the countries surrounding them permits containment of any spill-over effects that may be brought about by the first convulsions of freedom.

It would, however, be a grave mistake to associate the reduction of tension and the success of disarmament policies in Europe with the future arms policies and security concerns of the developing world. Most developing nations have been pushed for years to the acquisition of considerable military power. Many developed countries were partly responsible for this buildup, not only in that they set the wrong examples, associating military preparedness and over-insurance with national security, but also because the international influence they exerted often tended towards the maintenance of special military aid and assistance, not only in training but also in military procurement in the South. Thus, it is often possible to see that by selling weapons to specific developing countries, the producer nations assured some level of co-operation and influence between that nation and themselves. If this mode of action is seen through the lens of the ideological disputes originating in the cold-war era, it is not difficult to perceive that, at times, powerful countries aided and supported military-oriented governments as long as these provided some sort of containment to the expansion of the policies of the competitor Power. This support

was obtained through military assistance, training, weapons transfers, and military co-operation treaties, which emphasised the bilateral level of the co-operation and discouraged the multinational efforts at collective defence.

The amount of military expenditures in developing countries rose to a level that was not commensurate with the level of their development or of their economic effort. Most of the time, the imbalance thus produced in these nations led to the taking over of the government by the military themselves and to subsequent repression of the populations. Once in the spiral of an arms race, developing countries found that it was very difficult to think about security without thinking of constant rearmament and, to this end, constant realignments with one Power or another. The network which emerged as a result of the arms trade was further complicated by the vested interests of powerful lobbies of the military-industrial complexes of developed nations.

The reduction in the East-West arms race, together with the deflation of the value of nuclear weapons, has generated greater concentration on the production of conventional armament. As the military-industrial complexes in developed nations have grown at a frenzied pace in the last fifteen years, any attempt to curtail the production levels can be seen as a threat to this industry; thus it is not difficult to imagine that most producers will attempt to interest developing nations in acquiring their excess product. The black market in weapons sales will in all probability increase at the same pace as developed nations disarm among themselves.

While these trends do exist, it is equally important to try to determine whether or not developing nations are more or less prone to continue sustaining their military expenditures today. It can be argued that the reduction in super-Power competition at the East-West level has produced a more stable and secure environment for the whole world and that this will, in itself, encourage developing nations to use their resources towards socio-economic development rather than military procurement. This reasoning is eminently logical but does not answer the material and non-material needs and problems of developing countries.

It is necessary for us to consider that developing countries today demonstrate a lack of trading partners, a lack of effective regional integration mechanisms, and a lack of institutionalised co-operation among similar countries. More important, the world economic crisis of

the last decade has hit these countries with full force as industrialised countries have raised the levels of interest on their loans and developed much more protectionist policies than before. The ensuing instability at the national level bred dissatisfaction and social unrest, which in its turn led at best to broad democratisation processes and at worst to an upsurge of parallel economies for narrow marginalised sectors of the society. Whatever the effect, many nations lost part of the internal and centralised control of their affairs. With the collapse of central authority and/or the lack of economic options open to their societies, many illegal groupings began to form, such as drug-traffickers, common bandits and guerrilla movements of no precise ideological stance. The governments, many of which had returned to democracy in the last ten years or so, found it difficult to guarantee the security of the people or even to manage the levels of corruption prevalent in their own bureaucracies. Since dictators and the military had often been seen in these nations as the cause of their problems and had therefore been removed after much struggle, these governments are reluctant to use their military apparatus for the achievement of law and order in their societies. In the hope of restoring security within the nation, they often feel compelled to increase the police apparatus of the State.

If we take these problems into account, it is easy to assume that the international reduction of East-West tension will not necessarily lead to greater individual security for developing nations. Their economies in disarray and the possibilities of controlling domestic violence reduced, most of these countries do not have the benefit of being part of a regional community with strong security and integration mechanisms that will help them contain their problems. For years, these countries strove to maintain good economic and military relations with one or the other of the super-Powers on the bilateral level. Therefore, if the super-Powers are seen as isolating themselves from this pattern as a result of lessening competition between themselves, it follows that many developed nations will conclude that their defence is up to themselves alone. Thus, an arms race is much more likely to ensue than before, if only for the control of the nation-State itself.

If we also take into account the fact that most developing countries have obtained a considerable military force as a result of years of building it up, the temptation to continue maintaining their military levels is strong. None of these countries can afford to disarm to a great extent. Despite the fact that such disarmament might bring about economic respite, the uncertainty of the international economic and

political scenario, added to the increase in internal instability, will counsel against this alternative. It would be an impossible situation for a country to disarm and then discover that it needed to re-arm in order to face its own security problems. Many countries lack the economic means to reproduce in future the level of military might they now possess. Should there be alternative umbrellas for co-operation and security, then this could provide enough confidence for countries to consider disarmament in a more systematic and organised manner without reducing their own security for the future— but no such mechanism exists today. Thus a reduction of military expenditure and the curtailing of an arms race in the developing world could come about only if there existed a stable regional background to the national instabilities or if control and security could be achieved in co-operation and not in isolation.

The present changes in the political climate of the world, and particularly of Europe, will generate new military needs and objectives. As stated above, strategic doctrines concerning the use of military power undergo changes when there are changes in the political context (the non-material element) and when technological advances render old capabilities obsolete (the material element).

As we have seen, some of these non-material changes will result in real cuts in military expenditures, certainly in those countries that benefit directly from reduced East-West tensions. The arms race of the last fifty years has been fuelled mostly by the static relationship between certain States and by the rapid changes in technological advances in the field of weapons. Today the context has changed but the rate of technological change has not.

The countries that are suffering most from the growing technological gap are those of the South, which are also the ones that do not immediately perceive a change in their favour in the new international political context. Thus, it is logical to assume that at both the material and the non-material levels, the South feels threatened by the international environment of today. A growing North-South divide might fuel an arms race rather than have the opposite effect, and military expenditures in the South might increase in the near future as a result, not only of perceptions of increased isolation between North and South, but also of renewed impetus for the arms trade between the military-industrial complex of the North and the countries of the South.

The only way in which disarmament could bring prosperity both to the North and to the South and benefit from the existing East-West

situation would be for a new dialogue to open up between North and South, a dialogue that would help identify common problems and interests, both material and non-material.

Future Security Needs

The future security needs of the world will probably be due to two types of threats: global and regional. Global threats include the environmental challenge and the solution of the international economic crises. Regional threats include the need on the part of developing countries to consolidate their institutions and generate order, to control and eventually eradicate drug-related violence, and to keep their territories from suffering foreign military intervention or being used as military bases.

There is an opportunity today to demonstrate the commonality of the interests and needs of nations in both the North and the South, and this opportunity does not necessarily begin with economic assistance but with technical assistance for the achievement of organisational planning and the consolidation of governmental institutions. Not only might such co-operation benefit countries of the North, such as those of Eastern Europe, but it might be of use to many countries in the South as well. Divisions between different types of nations might then be diminished rather than become more marked, as is the case at present. Perhaps this could also offer the basis for an initial dialogue between North and South, a dialogue that can become, in itself a confidence-building measure for more comprehensive negotiations in future.

A comprehensive global lowering of tension leading to disarmament can be achieved only if a new, equitable dialogue between developed and under-developed nations is institutionalised and if more effort is devoted to the creation of regional co-operation mechanisms. Perhaps the greatest challenge to international organisations today is to facilitate and implement such a dialogue.

DISARMAMENT, DEVELOPMENT AND MILITRY EXPENDITURE

Introduction

The remarkable transformation that took place in international political relations in the course of 1989 has raised the hope that an end of the confrontation between the major Powers is now in sight. Since the end of the Second World War the two super-Powers and their allies have invested huge amounts of resources in the construction of military systems that have threatened the future of mankind. This

situation may now be changing. The prospects for peace, at least in Europe, are now probably the best they have been in the last four decades.

Yet, old conflicts linger on, particularly among developing countries. Even though many regional problems are closer to solution, the possibility of the so-called "third-world war" still remains. But far more important, an economic crisis is threatening huge segments of the world's population and nascent democracies are finding their existence jeopardized by developmental failures. The debt crisis is not much closer to solution than it was a decade ago; growth, investment shares and welfare programmes are all

Saadet Deger and Somnath Sen are Visiting Research Fellows at the Stockholm International Peace Research Institute (SIPRI). at risk. The 1980s have been aptly named the "lost decade" in so far as economic progress goes. There is a close connection between peace and prosperity. The linkages between disarmament and development need to be stressed repeatedly. If the rewards of the current peace process are not shared equitably by the whole world, long-term peace will not emerge and new conflicts will countermand the present harmony.

Limitations and reductions of military expenditure are the most obvious measure by which the current arms-control regime can be evaluated. After the dizzy heights reached in world military spending by the late 1980s, its decline provides the best way of ensuring confidence-building and the releasing of resources for world development. The purpose of this article is to analyse the interconnections between disarmament and development and then to consider how cuts in military spending can be utilised to achieve prosperity through peace. The next section analyses empirically the scale of world military expenditure. In particular, it looks at the massive sums currently spent for European defence and deterrence. If this can be drastically reduced, as a consequence of the current peace process, then a better re-allocation of international resources will be possible. Section III discusses the theoretical framework that links disarmament to development through an extended notion of security. Section IV suggests policy options for making this transfer of resources feasible and realising the full potential of the disarmament dividend. The final section gives a brief conclusion.

Scale of World Military Expenditures

World military expenditure is now approaching \$US 1,000 billion per year. Most of this is spent by the industrial countries of the West

and the East. Around 80 per cent of international defence spending can be attributed to the two alliances, the North Atlantic Treaty Organisation (NATO) and the Warsaw Treaty Organisation (WTO). If other advanced countries, such as Japan and the neutrals in Europe, are taken into account, the share of defence spending accounted for by the industrial economies rises to approximately 85 per cent. In spite of the small share of the total in the third world, its aggregate military spending is not insignificant either. A preliminary estimate for 1989 puts total third world defence expenditure at around \$US 150 billion. This is significantly less than the level of the mid-1980s, when it was of the order of \$US 200 billion. However, given the economic crisis that most less-developed countries face today, military expenditure is unacceptably high.

The current European peace process raises hopes that significant conventional disarmament will take place in this region. It is therefore important to estimate the amount of military expenditure that is currently devoted to the European conflict between the major Powers. For many reasons, this is not an easy task. In particular, the allocation of the defence spending of the two super-Powers towards their European commitments is difficult to disentangle from the total. Some estimates are available for the United States, and similar proportions are probably applicable to the Soviet Union. On the basis of these figures it is possible to make rough calculations about the extent of defence spending, and concomitant military capability, currently utilised for Europe.

During the period 1974-1982 it has been claimed by the United States Department of Defense that about 15 per cent of annual United States military expenditure was used for the operating costs of bases in Europe. However, total costs for the European and NATO commitment by the United States are much higher. The latter would include forces stationed on the United States mainland but available for redeployment in times of conflict. It would also include weapons acquisition, operations and support costs, research and development (R&D) expenditure and so forth. This higher figure would amount to around 60 per cent of United States defence spending, according to information presented in the mid-1980s. In current prices, the spending attributable to the European military security situation is some \$US 180 billion.

It should be emphasised that even if all American forces are withdrawn from the European continent and deactivated, the saving in total cost may not be of the order of the \$US 180 billion mentioned above. However, in terms of new security doctrines, and of the

disengagement of the United States and even the possible disintegration of NATO in the long term, this figure sets an upper limit to the expenditures that can potentially be released for other purposes. Considering that such a possible scenario for disarmament might lead to compensating commitments elsewhere (for example, bolstering the Navy to protect the mainland as the forward line of defence), the reduced net expenditure for the United States could be around 50 per cent of current total annual military expenditure. Accordingly, the United States would spend about \$US 150 billion on Europe.

It is more difficult to make such estimates for the Soviet Union, simply because the data base is much weaker. However, if the similar share of 50 per cent is assumed as an indication of the Soviet burden for its spending on WTO and Eastern Europe, then a rough estimate can be made of costs here too. Thus, using SIPRI estimates of comparable prices and purchasing power parities to convert roubles into dollars, Soviet expenditure for WTO commitments would be around \$US 125 billion per year.

The SIPRI data base shows that European NATO spent around \$US 155 billion in 1988. The neutral and non-aligned nations had defence spending of around \$US 14 billion. Non-Soviet WTO countries' military expenditure is again difficult to compute in dollar terms since the exchange rates may not reflect price differentials. Using purchasing-power parities, their defence spending is of the order of \$US 23 billion for 1988. The aggregate sum needed to maintain the conflictive situation in Europe which has existed for over four decades is a staggering \$US 467 billion of military expenditure per year. This is approximately half of total world military spending (including the total strategic commitments of the two military super-Powers). We therefore arrive at the conclusion that the post-World War division of the two alliances on the European continent costs approximately 50 per cent of the total sum that the whole world spends on its military system.

Aggregate financial data can only provide a partial picture. The share mentioned above rises rapidly if we compare procurement spending or spending for R&D. Qualitative parameters, such as the number of scientists and engineers involved or the inputs required for the defence industrial base, imply a very much higher proportionate level of resources that are required to sustain the military framework. If national security needs can be redefined and arms control succeeds in moving towards partial disarmament, then the situation may be ripe for a qualitative transformation of the international defence economy. In these circumstances, the long-term beneficial impact will be much

greater than any short-term resource transfer, great as the latter may be. Even though in total the third world spends much less than developed countries (both East and West), its economic burden is much higher since it can ill afford to expend vast resources which compete directly with socio-economic needs. Currently, the developing countries taken together spend more than \$US 150 billion for military purposes, which is about 16 per cent of the world total. Over the decade of the 1980s, the military expenditure of the third world constituted 5 to 6 per cent of GDP, thus devoting around 20 per cent of central government expenditure to national defence.

Arms importation, of both military hardware and technology, constitutes another major source of "unproductive" spending. Though not all of it is paid for, the opportunity costs in terms of debt accumulation, loss of alternative imports, forcing an arms race among neighbours and a general buildup of insecurity, have been significant. Over 60 per cent of all major conventional weapons traded are sold to the third world. The proportion rises to around 80 per cent when all weapons are taken into account. Almost all major sellers are advanced industrial societies, though there are a few significant exceptions (such as China). The value of major weapons imported by the third world is around \$US 23 billion per year, while the value of all weapons (including support services) is approximately \$US 40 billion per annum.

Though the arms trade is on the decline, mainly for systemic reasons such as economic crises, its opportunity cost is still significant. One way of looking at this issue is to compare it with imports of machinery and transportation equipment. The latter contributes enormously to economic growth, and its absence often acts as a binding constraint to further development since domestically produced substitutes are not generally available. On the other hand, weapons imports are most often in direct competition with machinery and other manufactures that fall within a similar industrial trade classification category. It has been estimated that the purchase of major foreign weapons systems is equivalent to about 20 per cent of machine imports. In a counterfactual scenario, if arms imports were replaced by imports of machinery, the latter would rise by 20 per cent. The effect of such a transfer on economic growth would be immeasurable.

After an appraisal of the magnitude and the scale of world, European and third world militarisation, it is appropriate to analyse the links between disarmament and development within an expanded framework of security.

Disarmament, Security and Development

In its broadest sense, there are at least five ways in which security can be defined. These are: regime, national, regional, common and global. Each has three dimensions: military (strategic), political and economic. Taken together, a conceptual matrix of 15 elements can be defined. Numerous issues can now be categorised within this matrix. Table 7 presents an illustrative example.

Threats to regime security are an enduring problem in the third world. There are many reasons for this: the creation by colonialism of many States which did not properly define the status and boundaries of minority populations; a crisis of economic failures where the blame is imputed to the ruling regime; the absence of institutions which could cope with nation-building; the ambition and military power of elites who refused a participatory role to the majority of citizens.

National security problems are often motivated by similar causes. Opposition to the regime sometimes translates into questions regarding the legitimacy of the State itself. The process of democratisation is hindered and national security is often used as an excuse to justify dictatorial governments. In addition, inter-State rivalry, often manifest in a crippling arms race, creates a major threat to national security. There are very few forums to which countries can turn to resolve such disputes. Sadly, even the United Nations has failed to live up to expectations. As has been claimed by Sir Brian Urquhart:

“It is clear that the respect for the United Nations Charter and the Security Council, and the international authority that would be derived from that respect, had been seriously eroded for over 40 years by the perennial differences of the Council’s permanent members.”

Bilateral agreements with major Powers seem to be one of the few effective guarantees that smaller States can have.

Yet, such a solution can only be transient since it does not go to the root of the initial problem.

As regards regional security, the anarchic nature of the international political system is forcing new power centres to evolve. With the use of more technologically advanced weapons and the proliferation of lethal arms, such as ballistic missiles, regional issues threaten even international stability.

This leads to the concept of common security which was envisaged by the Palme Commission, named after the late Swedish Prime Minister, Olof Palme. Common security has three essential ingredients. First,

the policies pursued by nation-States should be in the interest of all the States concerned. Policies should be undertaken jointly, if possible, that is, by all interested parties together. Thirdly, activities which favour co-operation and reduce deception are preferable. As yet, in most areas of the world, these elements of common security are conspicuous by their absence.

TABLE 7
Disarmament, Security and Development

<i>Sphere type</i>	<i>Military</i>	<i>Political</i>	<i>Economic</i>
Regime	Less use of military for internal security	Greater legitimacy	Government spending for security-economic needs
National	Reduction of military threat	Democratisation	Release of resources for additional consumption/investments
Regional	Multilateral effort to end local arms race	Less interference in political system of neighbours	Economic (trade) co-operation
Common	Defensive defence	Confidence-building measures	Debt reduction and economic aid
Global	Lower hazards from military activities	More international co-ordination	Financing environmental protection

Then, finally, there is global security in the form of environmental concerns. Many conflicts today, military, political and economic, arise from our inability to use the ecology and the global common properly. In addition, the military establishment itself is a serious polluter and the international arms race, particularly in the nuclear field, has created major environmental degradation. As the Chairman of SIPRI, Dr. Inga Thorsson, has claimed, the concepts of "globalism" and "commonalism" must now become an integral part of security relations.

Third world countries are faced with a rather tragic contradiction between the "security dilemma" and the "poverty trap." They do have genuine security problems: history, colonialism, internal dissensions, racial and tribal divisions, and the weakness of domestic democratic institutions as well as intervention (both direct and indirect) by the major military Powers, are all important in exacerbating insecurity. These profound concerns often force governments to give primacy to defence spending over other forms of social and economic spending.

Yet, the final consequences may be unproductive, since developmental failures often lead to a much greater security problem than traditional concerns.

How do the concepts of disarmament and development fit in to our extended notion of security? The United Nations has for many years propagated the cause of disarmament and development. In 1987 the United Nations International Conference on the Relationship between Disarmament and Development was held to highlight these issues. But in the light of super-Power confrontation the cause was not as successful as one would have wished it to be. However, with the current changes in the political sphere, its time may have come, and it is worth while to go over the basic issues briefly.

Disarmament means a reduction in arms. In the last 40 years there have been almost no cases of actual disarmament in the sense that a nation had less arms compared to the past. For individual weapons systems, the INF Treaty, which eliminated intermediate-range missiles from Europe, is one of the few cases in which some success has been attained. The current negotiations on conventional forces in Europe (CFE) promises the elimination of many conventional arms. The non-proliferation Treaty (NPT) has succeeded in restricting the spread of nuclear weapons. In aggregate, however, the world military sector has always advanced whether its growth rate has been slow or fast. We will therefore use a weak measure of disarmament: the cases in which defence spending goes down, or procurement budgets decline or armed forces are reduced or industrial conversion takes place or arms imports fall or weapons systems are discarded without replacement or modernisation. Further, military expenditure as a proportion of the gross national product is called the military (defence) burden and sometimes its reduction signals at least a (weak) measure of disarmament.

Development implies a process of social and economic change that increases per capita income and improves the quality of life of the greatest possible number of people in society. In addition to growth, development should provide the right to full employment, to egalitarian distribution of income, to the eradication of poverty, and to the provision of basic needs, as well as entitlement to a higher quality of life as measured by, say, literacy, infant mortality, life expectancy, health care and available nutrition.

Disarmament and development are closely linked both for the third world and in the North-South context. The United Nations study of 1981 on this relationship, produced by a group of governmental experts

chaired by Ambassador Inga Thorsson, makes explicit the interlinkages. But the continuing expansion of the military sector has always been justified as a guarantor of security. Yet, as table 1 clearly demonstrates, disarmament—if achieved—could alleviate many of these threats to security, be it regime, national, regional, common or global. The 15 examples shown in the table, though illustrative and hypothetical, clearly demonstrate the positive impact of arms control on enhanced security. Many of the examples also demonstrate how socio-economic development can be fostered and political institutions created when the pace of arms dynamics is reduced.

It is often thought that the link between disarmament and development applies only to the third world. It is true that in its starkest form the effects of undue militarisation are often felt in the poorest societies of the world. Yet, the 1980s have increasingly shown that even the major Powers and advanced industrial societies are not immune from the debilitating effects of the arms race.

During the period 1980 to 1989 the United States spent around \$US 2,500 on its defence. It acquired and extended an awesome capability of military power, including space defence systems and a strategic nuclear triad sufficient to destroy any known opposing society many times over. Yet, during the same period, it became the largest foreign debtor in the world and accumulated equally awesome budget and trade deficits. Ex-Rear Admiral of the US Navy Gene La Rocque has aptly claimed:

“America’s deteriorating international trade position is more damaging to our security than any new Soviet weapons development. The enormous burden of the rising federal budget deficit threatens the lives and prosperity of our children. The American educational system needs a major new infusion of creative ideas and resources if we are to retain our world influence in the future.”

The Soviet Union has recently reversed a trend of twenty years and begun a new phase of military expenditure reductions and unilateral disarmament. Much of the impetus behind these arms control initiatives comes from economic factors. As President Gorbachev has stated, the issue now is to transform an “economy of armaments into an economy of disarmament”. A programme of industrial conversion, where defence factories are utilised to produce machinery and consumer goods for the ailing civilian sectors, has been initiated to rejuvenate the economy. Depending upon the estimates used, the Soviet Union has spent 9 to 12 per cent of its gross national product on the military sector. This is

a burden that no country, however strong economically, can afford. Even at the height of the Reagan arms buildup, the United States spent about 6 per cent of its gross domestic product (GDP) on the military. Owing to the relative strength of the two economies, the USSR spends a 50 to 100 per cent larger proportion of its economy than the United States to achieve approximate parity. The current trend is therefore to utilise the resources released by a lower force structure to help efforts for domestic development.

The limitation of military expenditure is the simplest, and often most effective, way of achieving lower levels of arms and greater ingredient in achieving common security, particularly among erstwhile belligerents. Finally, reductions in military spending release resources which can be utilised for developmental purposes. As emphasised earlier, many of the security problems of the third world countries arise immediately from developmental failures. The alleviation of poverty and malnutrition and the provision of basic entitlements are often the first steps towards greater security. The close link between disarmament, development and security should be clear.

Disarmament Dividend

The proportion of resources used for the world military sector is great indeed. From an historical perspective, the period after the Second World War developed into a long-term, continuing, almost self-perpetuating system. In spite of the fact that East-West confrontation has not erupted between the major Powers, all States involved in it have created a "semi-war economy." There seems to be little historical precedent for such preparedness for war during a period in which there was no actual war in Europe. The special situation of the United States is illustrative. During the period before the Second World War, 1930-1939, the United States spent around \$US 11.5 billion (at 1990 dollar values) per year on military expenditures. After 1950, annual defence spending was consistently *20 to 30 times more* than the amount in the pre-war decade. In 1990, only 13 days of military expenditure would consume exactly the same amount of real resources (after adjustments for inflation) as was spent over one year during the period 1930-1939. Though no precise data are available for the Soviet Union, there is no reason to believe that the situation there was very different.

It is possible that international military security, specifically the avoidance of another war, required the massive expenditures needed to finance the "policeman role" that the super-Powers and their followers

performed. However, as the situation is changing rapidly, and political developments emphasise the positive elements of the peace process rather than deterrence alone, it is time to think of other options. Reduction of military expenditure is the most obvious way of releasing the disarmament dividend for use in global development.

The Soviet Union has announced reductions in defence spending by 14.2 per cent during the years 1989-1990. The United States has cut national defence expenditure outlays in real terms (after inflationary adjustments) by 6 per cent between (fiscal years) 1987-1990. After the unprecedented rise in their military spending over the whole of the 1980s, the downturn must provide some welcome respite. The question now concerns the alternative uses to which these resources can be put. If at least some of these resources are not utilised for equitable international development, helping the third world to recover from the devastating effects of the debt crisis, protecting the environment and achieving security against disease, hunger, malnutrition and poverty, then the prospects for lasting peace are not good.

Official development assistance (ODA) is one of the more imaginative ways in which the third world can be helped to recover from its deprivation. Yet, its level and particularly its share in GNP is still quite low. The United Nations call for allocating 0.7 per cent of GNP to ODA is still far beyond the practice of most donor countries, though there are significant exceptions, such as the Nordic countries. In 1988 the richest Western economies gave, in aggregate, 0.36 per cent of their national product as foreign aid, far less than the amount considered optimal by most analysts. Comparable data for the USSR and Eastern European countries are still quite controversial and are not reported here. It is of considerable interest to compare levels of military expenditure and development aid and to see the relative magnitudes. This might also help identify the level of resource transfer that is feasible under defence spending limitation scenarios. Table 8 provides 1988 figures, in the first three columns, for ODA, military spending and the ratio of the two. These are given for the European Community as a major collective economic player, the United States and Japan, as well as for Sweden. The last-mentioned represents a small group of neutral countries which have maintained independent, strong defences, yet have been very generous with foreign aid.

It is clear that traditional security commitments, reflected in military expenditures, are of much greater concern to the European Community and the United States than to such countries as Japan and Sweden.

While for the United States the value of ODA is 3.4 per cent of the value of military expenditure, for Sweden the ratio rises to over 34 per cent. The third column reflects the allocation that countries decide to make to international military security and to non-military security.

TABLE 8
Military Expenditure and ODA, 1988

	ODA	Military expenditure	Rise in ODA due to 10% cut in military exp.	
			ODA/Milex	(Percentage)
	(Millions of US dollars)			
European Community	21,611	151,860	14.2	70.3
United States	10,141	294,901	3.4	290.8
Japan	9,134	28,521	32.0	31.2
Sweden	1,529	4,442	34.4	29.1

Source: Author's calculations and SIPRI data base.

More important is the fourth column in table 2. This shows how much ODA would rise if a 10 per cent reduction in government military expenditure were transferred to official aid. For Japan and Sweden the rise would be modest though helpful. For the United States the increase would be very high indeed. In effect, a modest 10 per cent cut in defence entails an almost 300 per cent (threefold) rise in ODA. For Western European countries, also, the increase in international resource transfers could be significant if modest disarmament proposals were implemented and military expenditure reductions given priority.

An alternate set of calculations would involve hypothesised resource transfer from conflict resolution in Europe. If all the countries involved in the region, including the super-Powers, decided to reduce defence spending in response to recent changes in the security environment, the savings would be enormous. More specifically, consider the imputed cost of the conflict in the European region. This was estimated above as \$US 467 billion per year in 1988. In comparison, total ODA from all countries taken together is about \$55.9 billion for the same year. A moderate 10 per cent cut from defence spending for Europe transferred as foreign aid would raise world ODA by around 84 per cent. In other words, total official development assistance could almost double if only a 10 per cent limitation on the defence spending currently devoted to the post-war European division and conflict were transferred as ODA.

The possibility for substantial increases in the disarmament dividend is present in the current world system. What is lacking is the political will. In the absence of political action there is no mechanism by which such transfers can take place in the short run. The non-military threats to security are compelling enough. At the same time, war as a means of solving foreign policy problems is no longer an option in Europe. The time has therefore come to address the relationships between development and disarmament in a practical way and to identify the specific rewards of the current peace process.

Conclusion

In 1989 it was claimed:

“Suddenly we are in a hurry. We must hurry through the demographic transformation if we are to achieve some reasonable relationship between numbers of people using resources and the capacity of those resources to support us. We must hurry to make fuller use of our best agricultural areas if we are to stop the misuse of low-potential areas which should be utilised for forests and grazing or left alone altogether. We must hurry to apply known technology and to provide 10 billion people a decent living, without destroying our fragile biosphere. Implicitly, this means we must hurry to achieve improved health, which itself involves moderation in the number of births. We must hurry to bring education to all of our populations because this is essential to our other objectives. We must hurry to create the conditions for job creation and income growth because, without efficient production and adequate income, the developmental process cannot be sustained.”

Population pressures, conflict over natural resources, low agricultural productivity, migration of refugees, atmospheric pollution, lack of basic rights such as health, education and minimum income: all these are as much of a security threat as weapons and military force. Sometimes they may even be related. The rate at which we could have moved towards the goals of sustainable world development, and security in the wider sense of the term, has been slow for four decades because military security commitments have been of overriding concern. This must now be challenged. The central concern of the 1990s is threefold: to reverse the arms race; to protect the environment; and to promote equitable development. Military expenditure reductions, and resource utilisation to tackle non-military threats to security, constitute the first step on the long road towards that desired goal.

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AGREEMENT ON REDUCING FORCES IN EUROPE

Some time this year, barring some exceptional and unforeseen event, the 16 members of the North Atlantic Alliance and the seven States which signed the Warsaw Treaty will conclude the most sweeping arms reduction agreement ever attempted. After decades of cold war, political animosity and military confrontation, statesmen have revolutionised their thinking about the future of Europe and the futility of war as a means for pursuing political objectives. Although it is impossible to say just when this process of change began, there are several identifiable milestones along the way.

The NATO Alliance adopted the Harmel Report in 1967, even as it was in the process of adopting a new strategy—flexible response. Indeed, flexible response (which provided for the possibility of using nuclear weapons in defence of the integrity of the territory of NATO member States) may be interpreted as reflecting one element of the Harmel Report, namely, that NATO should be able to defend itself militarily. The second element, however, held out an olive branch to the Soviet Union and its Warsaw Pact allies. It declared a willingness to negotiate agreements which through their military and political significance could enhance security, stability and peace.

The Soviet invasion of Czechoslovakia to crush the Prague Spring in 1968 cast doubt upon the utility, even the credibility, of the second element of the Harmel Report. None the less, in the early 1970s most member States of the two alliances entered into preparatory negotiations to establish the terms of reference for the Vienna talks on reducing conventional armed forces in Europe, known in the West as the mutual and balanced force reduction (MBFR) negotiations. At the same time, the 33 States constituting Europe (all but Albania) as well as the United

States and Canada were meeting in Helsinki to establish the rules and procedures for the Conference on Security and Co-operation in Europe (CSCE).

Ironically, no progress at all was made in the Vienna MBFR negotiations. The United States had entered into these negotiations as a means of achieving negotiated mutual withdrawals rather than the unilateral United States troop withdrawals then being advocated by Senator Mike Mansfield and other members of the United States Congress. For its part, the Warsaw Pact seemed to have little interest in achieving an agreement, being, as it was, in the midst of a major programme of modernising its armed forces in Central and Eastern Europe. Despite their long duration without agreement, the MBFR talks also contributed to the making of an environment in which serious agreements could be reached. For nearly 15 years, the armed forces of the MBFR participants were the subject of discussions and analysis; the effect of this experience should not be undervalued.

The more politically oriented CSCE process did reach an agreement late in July 1975 when the Helsinki Final Act was signed. Initially greeted with much scepticism, the achievement of political agreement on a framework for addressing the entire spectrum of problems relating to security and co-operation in Europe was, certainly in retrospect, a turning-point in European history.

The farmers of the Helsinki Final Act were wise enough not to allow any one dimension of the political, security and economic structure to dominate the process. Thus each of its three major subject areas—security, economics/science, and humanitarian issues—forms part of an integral whole. With regard to security, the Final Act embraces a modest set of confidence-building measures, including a political obligation to notify major military manoeuvres and provisions for the voluntary invitation of observers to military exercises. The major portion of this section, however, spells out ten principles to guide relations between the 35 participating States. The seventh principle stipulated respect for human rights and fundamental freedoms, including freedom of thought, conscience, religion or belief. This alliance of human rights and security constitutes one of the two elements of genius in the Helsinki Final Act. The other is the concept of follow-up meetings at regular intervals to review the implementation of obligations as well as to consider further proposals. This concept gives life to the notion of process. The integral nature of the CSCE process was tested in major follow-up meetings in Belgrade, Madrid and Vienna as well as in a

series of smaller CSCE expert meetings that probed performance and expectations in each of the three major subject areas—labelled “baskets” in CSCE parlance.

As part of a balanced, comprehensive outcome at the Madrid follow-up meeting in 1983, agreement was finally reached on a mandate for a Conference on Confidence- and Security-building Measures and Disarmament in Europe. The Madrid meeting was a particularly stormy one. The Soviet Army had invaded Afghanistan in December 1979, a Soviet submarine was grounded on the rocks near a military installation in the Swedish archipelago in 1981, martial law was imposed in Poland, and Western insistence on detailing human rights abuses in plenary sessions and to the press made negotiations difficult. Moreover, the United States Administration under President Reagan was viewed by many in Europe as unfriendly to progress in the area of arms control. None the less, experts continued to hammer out the details of an agreement in spite of the vexed political environment and the apparent irreconcilability of various positions.

At virtually the same time, the decision by the North Atlantic Alliance to modernise its nuclear capabilities in Europe by deploying Pershing II and ground-launched cruise missiles (GLCMs) began to be implemented. This was also a major event in laying the groundwork for arms control agreements in Europe. As much as anything, this demonstrated Western European resolve not to be intimidated by the wholesale deployment of Soviet SS-20 intermediate-range missiles aimed at targets in Western Europe. This deployment undoubtedly factored heavily in the development of “new thinking” among the Soviet leadership as it demonstrated the futile and precarious nature of arms buildups as a means of achieving political goals. This made agreements on new confidence- and security-building measures (CSBMs) and the elimination of INF missiles both more attractive and possible.

After a long period of political stagnation under the leadership of Leonid Brezhnev, a process of re-evaluation began under the new General Secretary Yuri Andropov. The necessarily innovative character of new thinking in Moscow, coupled with the ill health of the new leader, slowed the process considerably. None the less, it had already become clear that the Clausewitzian precept that war is the continuation of politics had become inoperative in the nuclear age. Irrespective of the desirability of preserving peace through the threat of nuclear annihilation, deterrence was a modern day reality. The passing of Andropov’s successor, Chernenko, from the scene brought Mikhail Gorbachev to

power in the Soviet Union and unleashed those who believed in political dialogue, arms control, and diplomatic agreement as the path to greater stability and thus greater security in Europe.

Contributing significantly to the evolution of new thinking was the growing realisation of severe difficulties in the centrally planned economy of the Soviet Union. Measured against economic growth in the West, particularly Western Europe and Japan, it was abundantly clear that a fundamental change in approach was needed.

It was against this background that the Stockholm Conference, whose mandate had been decided in Madrid, convened. The deaths of both Andropov and Chernenko during the conference almost certainly resulted in some attenuation in the Soviet Government's attention to the question of confidence- and security-building measures. But the appearance of Mr. Gorbachev resulted in new decisiveness in the Soviet position and a demonstration of desire to reach agreement in Stockholm.

There are several reasons why agreement on the Stockholm Document was crucial to the probable achievement of an agreement in the Vienna CFE negotiations. Three are noteworthy. First, it represented the first step in a step-by-step process which facilitated overcoming the natural scepticism of military leaders in several countries, not the least in the Soviet Union, about the acceptability of agreements which pursued greater openness in military affairs. Secondly, the agreement embodied the first negotiated right to conduct on-site inspection of military forces in the field. And finally, the outcome at Stockholm demonstrated the possibility of reaching significant agreement in the area of military arms control in a multilateral forum of 35 sovereign and independent States. In this context, it also demonstrated the ability of the two largest military Powers to negotiate constructively in the interest of multilateral agreement.

It goes without saying that the INF agreement between the United States and the Soviet Union was also a key in developing the arms control culture and environment which has contributed to the probability of success in Vienna. Several basic principles were established which will carry over into the CFE setting. Parity at lower levels, instituting the principle that the one who has most reduces most, was central to the INF agreement and will be to a CFE agreement as well. A detailed exchange of information validated through intense on-site inspection is likewise integral to both negotiations. And agreement that provisions for stringent verification, best exemplified in former President Reagan's

dictum “trust, but verify”, has become a dogma of contemporary arms control agreements.

The third CSCE follow-up meeting in Vienna, which ended early in 1989, was, like its predecessor in Madrid, an intense review of the implementation of previous commitments and consideration of new proposals. Significant progress was made in the field of human rights and humanitarian affairs. Two expert meetings on human rights were mandated, one in Copenhagen and one in Moscow. Agreement was also reached to hold several other expert meetings before the next CSCE follow-up in Helsinki in 1992. In the security area, it was agreed to continue negotiations on confidence and security-building measures on the basis of the mandate agreed in Madrid.

At the same time as the Vienna follow-up meeting was under way, the 23 States belonging to NATO and the Warsaw Treaty Organisation agreed on a mandate for negotiating conventional arms reductions in Europe. While these new negotiations were to be of an autonomous nature, it was agreed they would take place within the framework of the CSCE process. It was also agreed that the CFE negotiations would seek to reduce conventional forces in Europe; neither naval nor nuclear forces would be covered in the negotiations.

Why CFE?

For more than forty years following the Second World War, Europe was plagued with mistrust, suspicion, fear, political competition, military confrontation and potential instability. There is little to be served here by resurfacing all the history that contributed to those forty years. Suffice it to say that by the mid-1980s, Europe was stuffed with arms and armaments—the instruments of war. Yet, an objective consideration of all political, economic and military factors would have shown that war would have been a calamity for all of Europe, indeed for much of the world.

At least three times during those forty years, force of arms had been brought to bear in Europe against ordinary citizens who sought more individual freedom for themselves and their fellow countrymen. While none of these three occasions threatened to bring on another world war, each exacerbated already existing suspicions and estrangements giving sustenance to the Cold War.

The dividing line between Western and Eastern Europe appeared to become more indelible in the context of military modernisation and buildup. With full understanding of the offensive strategy of Warsaw

Pact forces, NATO sought to enhance its capability for forward defence. Anti-tank weaponry on the Western side evoked anti-anti-tank measures, such as reactive armour, on the Eastern side. The ability to strike deep was enhanced on both sides with more sophisticated weaponry.

The two Germanys became most illustrative of the situation. In the German Democratic Republic, as many as twenty Soviet manoeuvre divisions plus six East German divisions and approximately 30 main operating air bases populated an area about the size of the American state of Ohio. In the slightly larger Federal Republic of Germany, the 500,000-man *Bundeswehr* was supplemented by four United States divisions and two armoured combat regiments. In addition, the British Army on the Rhine as well as Dutch and Belgian forces maintained a sizeable presence and commitment to the defence of NATO in the northern part of the Federal Republic of Germany. And a contingent of French forces maintained a permanent presence in south-western Germany. Allied air capability was organised into two tactical air forces. Seldom, if ever, have so many forces occupied so little real estate in peacetime.

Neither the MBFR negotiations nor the CSCE process was configured in such a way as to promote negotiated solutions to what was an all-European dilemma. At the same time, both made their unique contributions. MBFR covered only a limited area in Central Europe; it did not extend to Soviet territory in Europe or include all the States in Western Europe which are politically and militarily critical to European security. ESCE is a political process which entails only political obligations; this is not the format in which one negotiates legally binding treaties. Moreover, CSCE is an association of 35 sovereign and independent States, with the full participation of the neutral and non-aligned States of Europe. The requirement for drastic reductions of military potentials is, in the first instance, the business and obligation of those who possess them—the States belonging to the two alliances.

The concept of reducing military potentials in Europe could not be restricted to the two Germanys or to Central Europe as was the case in MBFR. Therefore, the mandate agreed on in Vienna stipulated that the reductions area would cover all of Europe, including its island States and territories. All 23 States belonging to the two alliances actively participate in the negotiations, with all their relevant equipment in the zone of application constituting part of the agreed totals. CFE will conclude with a treaty requiring ratification by the parliamentary councils of the States parties and become part of the codex of international law.

Initial Approaches

The traditional military security problem in Europe has been the invasion of one State by another. It therefore made great sense when the two sides agreed that two major objectives of the negotiations were to eliminate the capability for surprise attack and to eliminate the capability for conducting a large-scale sustained offensive. Both these objectives relate to the capability to invade, to seize and to hold territory.

In modern warfare, it is the main battle tank that forms the backbone of the ground offensive, that is, the ability to seize and hold territory. Tanks are supplemented by armoured fighting vehicles, armored personnel carriers, and artillery. For these reasons, the initial Western proposal at the CFE talks focused on these armaments and equipment. Later, it was agreed to include combat aircraft and combat helicopters as well as United States and Soviet troops stationed outside national borders.

At the beginning of the CFE process in Europe as a whole (without regard to alliances) there were more than 73,000 main battle tanks, 26,000 armoured infantry fighting vehicles, 106,000 armored personnel carriers and 57,000 artillery pieces. Much of this equipment is antiquated; but there is much of it also that represents the latest in military technology. More important, what is immediately clear is that there is far more than befits a situation of 40 years of peace in Europe.

In formulating their position for the CFE negotiations, the 16 countries of the Western alliance reasoned that the total number of tanks, armoured troop carriers and artillery pieces in Europe could be cut by approximately 50 per cent. This accords with the first Western objective in the CFE talks: the establishment of a secure and stable balance of conventional forces at lower levels. Therefore, *the first element* of the Western proposal was that after reductions are completed, there should be no more than 40,000 tanks, 56,000 armoured troop carriers (armoured infantry fighting vehicles and armoured personnel carriers) and 33,000 artillery pieces.

The seven members of the Warsaw Treaty Organisation quickly signalled their willingness to adopt this approach as a basis for the negotiations. Indeed, they also voiced a willingness to accept the proposed limits on tanks and armoured troop-carriers; the final limits on artillery were to be established after both sides had agreed on definitions for artillery.

In December 1988, at the forty-third session of the United Nations General Assembly, General Secretary Gorbachev announced unilateral reductions in the Soviet armed forces which included a reduction of 240,000 troops and 10,000 tanks in Europe—5,300 of which were to be taken from Eastern Europe. In the early stages of the MBFR talks, the West had proposed the withdrawal of a Soviet tank army from the MBFR reductions area. The unilateral reductions announced by Mr. Gorbachev exceeded those proposed in that most ambitious MBFR proposal. NATO welcomed the Soviet initiatives, but noted that much more was required since the Warsaw Pact would still retain more than a 2.4-to-1 advantage in tanks, armoured troop-carriers and artillery pieces.

The *second element* of the Western proposal was founded on the principle that no single country in Europe should be able to dominate the continent by force of arms, or by the threat of the use of force. Thus, a sufficiency rule was presented which proposed that no State be allowed to possess more than 30 per cent of the total numbers of equipment remaining in Europe after reductions to proposed ceilings were completed. For example, of the 40,000 tanks allowed in Europe, no State could possess more than 30 per cent, or 12,000. The same principle applied for armoured troop-carriers and artillery. Warsaw Treaty States also agreed to work on the basis of the sufficiency rule, although in all cases they suggested higher percentages for the sufficiency rule—for the three categories, between 32 and 35 per cent.

Since the desired outcome in Europe also related to the freedom and independence of individual States and enhanced stability in the region, the *third element* of the Western approach suggested that no State should be allowed to station more than 3,200 tanks, 6,000 armoured troop-carriers or 1,700 artillery pieces outside its borders on the territory of another State in Europe.

The reaction of the Warsaw Treaty States to this element of the Western proposal was also essentially positive, although they initially suggested higher figures in all three categories.

A *fourth element* of the Western approach was to establish parity between the two groups of States, that is, between the North Atlantic Alliance and the Warsaw Treaty Organisation. For example, this meant that the seven members of WTO could possess, after all reductions were made, 20,000 tanks, and the 16 members of NATO would likewise possess 20,000 tanks.

The principle of parity between the two groups of States in Europe was also accepted by States of the Eastern alliance. The division of Europe into a system of sub-zones was *the fifth element* of the Western approach. The objective of this system of zones was to ensure that there could be no subregional concentration of force which would be threatening or intimidating. The Eastern approach also contained sub-zones, although designed differently than those suggested by NATO members. In principle, then, both groups agreed on the use of sub-zones.

Initially, the most glaring difference in approach between the two groups of States was Warsaw Pact insistence that reductions also be taken in troops, "tactical strike aircraft", and combat helicopters. For its part, the Western Alliance had not included these categories in its initial proposal because of difficulties in definitions and verification. Fifteen years of experience with the data disputes in the Vienna MBFR talks had convinced many that troops were not a verifiable entity. The mobility and speed of aircraft coupled with the diversity of mission and role made aircraft a complex issue for negotiation among the 23 States. Similarly, the diversity and use of helicopters in both military and civilian endeavour (in many cases the same helicopter model used in civilian enterprise is also used for military combat) would make negotiations excessively complicated.

At the initiative of President Bush in May 1989, the Western Alliance expanded its proposal to include reductions to approximately 15 per cent below current NATO levels in both aircraft and helicopters. This expanded proposal included all land-based combat aircraft (the Eastern proposal had limited reductions to a single category of "tactical strike aircraft"). With regard to helicopters, all attack and assault helicopters were to be included. President Bush also proposed a 20 per cent cut in combat manpower in United States stationed forces and a ceiling on United States and Soviet ground and air force troops stationed outside national borders in Europe at approximately 275,000 each. Withdrawn soldiers and airmen on both sides would be demobilised under this proposal. An additional element of the new initiative prompted by President Bush was an acceleration of the timetable for reaching an agreement in CFE. He suggested that such an agreement could be reached within a year's time and implemented in an additional two to three years.

Towards Agreement

As the CFE negotiations have progressed in the Austrian capital, consensus has begun to form around the main elements of the initial

Western proposal as explained above. Of course, there have been modifications as experts have delved into the detail involved in reaching agreed definitions on the equipment to be reduced and destroyed. The tank category, for example, has become more comprehensive to include light tanks as well as main battle tanks and to take into consideration the possibility of future wheeled tanks. Instead of using armoured troop-carriers as a category, consideration is being given to an overall category of armoured combat vehicles with sub-categories of armoured infantry fighting vehicles, armoured personnel carriers, and heavily armed combat vehicles (tracked or wheeled vehicles which are not tanks and do not carry troops but have a large-calibre main gun).

The two sides are close to agreement on the use of designated permanent storage sites in which treaty-limited equipment not in active units, but counted as part of overall ceilings, can be stored. Such sites would be subject to on-site monitoring. Stabilising measures are also being negotiated which would restrict the size and frequency of large military exercises, limit the use of armoured vehicle launched bridges, and regulate the manner in which stored equipment is withdrawn from storage, used and returned.

The most difficult issue remains aircraft reductions. The Soviet Union seeks exemptions from reductions for different categories of aircraft. In Moscow's view, land-based naval aircraft, 1,500 air defence aircraft and 1,500 combat-capable trainers should be exempt from agreed ceilings. Such exemptions, in the Western view, are unacceptable and would even require additional aircraft on the Western side to preserve the principle of parity. As noted earlier, the wide range of helicopter types and usage also makes agreement on helicopter reductions problematic.

In February 1990, President Bush proposed more significant cuts in United States and Soviet troops stationed outside national borders in Europe. Instead of overall ceilings of 275,000, as had been proposed in May 1989, President Bush suggested that each side reduce to 195,000 the troops stationed in the Central European Zone, with the United States being allowed an overall total of 225,000 troops stationed in Europe. At the Ottawa ministerial meeting, the Soviet Union accepted this proposal with the stipulation that there be an absolute ceiling of 30,000 imposed on United States troops stationed in Europe outside the Central zone.

Although details remain to be worked out, both sides agree that an extensive exchange of information must set the stage for reductions as well as the verification of compliance with obligations undertaken.

Both sides have proposed rigorous verification measures, which include on-site inspection, aerial inspection, and non-interference with national technical means of verification. Nevertheless, the complexities of obtaining agreement from 23 sovereign, independent States to the details of on-site inspection remains a daunting task. For example, determining the number of on-site inspections any one State must receive is an intricate exercise, which must take into consideration the number of sites on its territory, the number of treaty-limited items, the size of the territory and other factors. This will not be easy. The number of inspections individual States and groups of States are allowed to conduct is similarly complicated, as are the rights of individual inspection teams at the sites to be inspected. The size of the protocol relating to inspection may well exceed that of the basic treaty text, as was the case in the INF Treaty. None the less, there is every reason to expect that a thorough and effective set of verification measures will emerge from the negotiations.

The speed of political transition in Europe has caused some to question the continued usefulness of the Vienna CFE negotiations. As non-Soviet State signatories to the Warsaw Treaty assert their independence and install freely elected democratic governments, it is frequently argued that this political revolution will itself result in the withdrawal of foreign troops from their territories. This may be true, but that is not the issue. What is at stake is effecting an orderly and permanent transition from a divided to an integrated Europe. In CFE, this means creating the legal obligation to *withdraw and destroy* huge numbers of military equipment items. Again, tank numbers are useful for illustrative purposes: between 30,000 and 40,000 tanks will have to be destroyed by the Soviet Union and Warsaw Treaty States in order to reach the agreed ceiling of 20,000 tanks after reductions. Without a negotiated agreement which has the effect of international law, there would be no requirement for destroying equipment once reduced. Moreover, the negotiations are part of the process of creating a new European security system. The CFE outcome will be instrumental in determining the future directions of the NATO alliance as well as the continued existence of the Warsaw Pact. Setting limits on the future military potential of a unified Germany within the stability promised by a continuing European process also falls within the purview of the CFE negotiations. And finally, the CFE negotiations in tandem with the CSCE provides the necessary framework within which the political revolution in Europe can take place. Without such a framework and the support it offers, realising the aspirations of individual States would be much more difficult.

The Western approach to the CFE negotiations has from the outset been dominated by the search for greater stability. Negotiated arms reductions, if properly carried out and verified, were considered part of the achievement of enhanced stability. Such reductions were not conceived of as an end in themselves. And, even in the face of such a dynamic political revolution, stability—not reductions—should remain the objective. Stability is neither an *a priori* condition nor a single moment in history. Rather, like history itself, stability is a process. Agreement in the CFE negotiations will be part of that process.

PROSPECTS FOR CONVENTIONAL ARMS CONTROL IN EUROPE

In March 1989, the 23 member States of the North Atlantic Treaty Organisation (NATO) and the Warsaw Treaty Organisation (WTO) commenced negotiations in Vienna on conventional forces in Europe (CFE), which, due to the multiplicity of the interests of individual countries and the complexity of the subject, may claim to be the most ambitious international arms control project in history. From a European point of view the talks are of the utmost importance. If successful, they will result within a few years' time in substantial improvement in the continent's military security system. In the longer term, CFE may even serve as a useful model for resolving military tension in other parts of the world.

While the formal objective of CFE, according to its mandate, "shall be to strengthen stability and security in Europe through the establishment of a stable and secure balance of conventional armed forces, which include conventional armaments and equipment, at lower levels... and the elimination, as a matter of priority, of the capability for launching surprise attack and for initiating large-scale offensive action", the current first phase of the negotiations will not adequately meet requirements for stability. This becomes apparent if we determine what stability really is, and look at the amount of equipment that will remain after agreed arms reductions have been carried out.

In general terms, stability is relative to the degree of improbability of war. For closer analysis, a distinction should be made between two relevant characteristics of stability.

- (a) Political stability prevails if, due to the absence of political antagonism, individual States or alliances do not have any incentive for attaining political goals by military force. This is apparently the case, for example, in the relationship between the United States and Canada.

- (b) Military stability may exist if opposing States or alliances do not see any prospects for using military power because the risks involved are unacceptable. In other words, military stability prevails if both opponents are sure that neither of them is in a reasonable position to successfully attack the other side, and that this situation cannot change unexpectedly. This presupposes that the opponents will act rationally. However, this cannot be relied upon in crises, and therefore a state of reliable military stability will not be attained as long as political opponents have at their disposal the means for waging war. Consequently, and as a matter of priority, existing offensive capabilities must be eliminated or substantially reduced.

This will not occur to a sufficient extent in the current, first phase of CFE. A minimum of 20,000 battle tanks, 28,000 infantry fighting vehicles, 16,500 artillery pieces, 5,700 combat aircraft, and 1,900 combat helicopters will be left with each alliance in the zone from the Atlantic to the Urals, if the Western proposals are accepted by all parties. Obviously, numerical parities slightly below actual NATO levels would put an end to the traditional conventional superiority of the WTO and bring about more security for the West. However, while remaining potentials may be regarded as sufficient for defence by both sides, the forces left will be equally capable of initiating and perhaps winning a war of aggression.

New sources of instability should not be accepted by any of the negotiating parties. Interestingly enough, both sides' opening proposals in March 1989 reflected some agreement in principle that CFE should be continued beyond the current phase. If subsequent talks are really going to take place, the sides should establish a qualitative objective for the entire project, rather than simply negotiate further step-by-step numerical reductions on a percentage basis. This approach would reveal how far they are prepared to advance in the arms control process, and possibly help to overcome remaining misgivings about the real politico-military intentions of the respective opponent. A more precise formula than "to strengthen stability and security..." will therefore be needed. Possibly, "sufficient defence" could be a useful label for describing the best possible outcome of an extended CFE process. But besides a vague idea that sufficient defence is related to a state of military security at low levels of armaments, there is no common perception of the substantial content of this concept. This becomes apparent when one compares its role in Eastern and Western military thinking.

Sufficient Defence: A Problem of Definition

Aspects of the Current Debate

Ever since Mikhail Gorbachev, in his political report to the 27th Party Congress in February 1986, first formally declared that the USSR stood for limiting military potentials to reasonable sufficiency, a lively debate on this term has been observed in the WTO, and particularly in the Soviet Union. While the former General Secretary failed to explain the exact meaning of reasonable sufficiency in the context of a defensive Soviet military doctrine, the discussions of the last two years have revealed different perceptions by different authors of the related crucial questions: How much is enough for what purpose? Or, to put it more precisely: What numbers and characteristics must the forces have to be considered sufficient for the implementation of what kind of defence concept?

With regard to numbers, Eastern experts' views range from below parity to more than parity with NATO forces at, however, generally lower levels than currently given. Proposals are not usually made in absolute numbers. With regard to qualitative aspects, several authors—mostly civilian—favour the concept of “defensive defence” or “non-offensive defence”, which would be restricted to WTO territory. Other writers, mostly from the military, appear to be less willing to renounce the capabilities needed to support major offensive or counter-offensive options. This reflects the traditional debate on the merits of mobile versus more static defence postures and, in particular, on the role of operational and tactical counter-offensive action in strategic defence.

Western authors dealing explicitly with sufficient defence restrict themselves predominantly to the analysis of the Eastern debate. This does not mean that the subject is anathema in Western strategic thinking. NATO has always been a strictly defensive alliance, challenged to respond to the WTO's superiority in Europe by relying on the minimum military power required for preventing war and granting security to its member States. In substance and intent, this is nothing other than a principle of sufficient defence. So it can be said that the new subject of debate in the WTO is a familiar problem for NATO.

However, there is no agreement on the numbers and characteristics of military forces needed for implementing NATO security policy in the West either. General dissent between official alliance positions and mostly unofficial experts has been reflected in an alliance-wide debate on “alternative” modes of defence. Moreover, dissent exists between

different proponents of “alternative defence” concepts. This is revealed by the various notions brought into the debate, i.a., “social”, “defensive”, “non-offensive”, or “non-provocative” defence, and “structural incapacity for attack”. As with the discussion in the Soviet Union, the role of counter-offensive action in a defensive strategy has been at the core of the Western debate.

The term “sufficient defence” is not found in the mandate of the Vienna CFE talks, and the formal aim set for the negotiations is at best a careful approximation of what sufficiency for defence may mean. Besides, different views are revealed by the opening proposals of the two sides. On the one hand, WTO countries call for deep cuts and keeping forces and systems necessary solely for defence and insufficient to launch surprise attack or conduct offensive operations. On the other, NATO countries propose establishing a situation in which surprise attack and large-scale offensive action are no longer credible options and, i.a., suggest “sufficiency” rules for limits on weapons which may be held by individual countries within the zone of the talks.

Clearly enough, “sufficient defence” is a dynamic notion. Different conceptions of the nature, goals, and appropriate modes of defence will give rise to different interpretations. Furthermore, the military strength and probable options of a potential aggressor are decisive factors. Last but not least, the perception of how much may be sufficient under specific conditions is judged in a subjective rather than impartial way. The same is true for “reasonable sufficiency”, as used by several Eastern authors. A more precise notion should be introduced. Wojciech Multan’s formula “minimum defence sufficiency” may point in the right direction because it emphasises the effort to achieve the lowest possible levels of armament.

Despite remaining deficiencies, minimum sufficient defence may be the best objective to achieve in future stages of the CFE talks. However, if all parties are to adopt the concept of minimum sufficiency, agreement must be achieved on (a) the content and (b) the means of translating minimum sufficient defence into force strengths and structures.

This sets the stage for the considerations that follow, which are intended to provide possible answers to these problems. In particular, four questions will have to be dealt with:

- (a) What indeed is defence?
- (b) What may be an acceptable definition of “minimum sufficient defence”?

- (c) Can minimum sufficient defence be achieved through arms reductions? and, if not,
- (d) What measures are necessary for realising minimum sufficient defence postures?

On the Nature and Modes of Defence

Both NATO and the WTO claim to have always relied on defence. If the aim of defence is understood to be the preservation of the existing situation, then the fact is striking that in the arsenals of both sides mechanised combat ground forces and large numbers of attack aircraft and far-ranging missile and artillery forces suited to seizing ground or hitting targets on the opponent's territory predominate. This is the intrinsic problem in Europe, which has always been of concern to both alliances. For the West, the vast superiority of the WTO's conventional potentials clearly exceeds defence requirements, and their high state of readiness and peacetime concentration close to NATO's Eastern borders are perceived as particularly alarming. While NATO's defence planning never reflected any intention to seize WTO territory, the WTO's traditional offensive military-technical strategy aimed at victory by destroying the Western alliance's military potentials on NATO soil, thereby casting some doubt on the allegedly defensive nature of Eastern military doctrine. Obviously, the definition of defence can be disputed, but if both sides wish to achieve a future state of mutual security, there is an urgent need to synchronise clearly defensive intentions and operational capabilities. This point was made by Foreign Minister Hans-Dietrich Genscher of the Federal Republic of Germany in his address to an East-West seminar on military doctrines, held in June 1989 at the Foundation for Science and Politics in Ebenhausen, the Federal Republic. On that occasion he made the following claim:

"The defensive character of an alliance does not solely result from a political-declaratory negation of military aggression. Confirmation of non-aggression and pledges of non-use alone offer no adequate assurance of security and stability. The defensive character of an alliance must be underlined by the defensive orientation of its military-strategic concepts. It must affect the operational, the strategic and the military-technical levels of the armed forces....There must be no discrepancy between defence policy rhetoric on the one hand, and actual force structures and strategic employment concepts on the other hand."

But first of all, agreement must be achieved on the fundamentals of defence. What really is defence, as opposed to offence? Carl von Clausewitz, the great German nineteenth century military thinker, was quite clear on the subject:

“What is the nature of defence? To repulse a thrust. And what is its criterion? To await this thrust. Consequently, this criterion turns any action into a defensive one, and by this criterion alone defence may be separated from offence in war.”

There is probably no better description of the difference between defence and offence, which, for Clausewitz, were but two different forms of combat with the common goal of gaining victory by annihilating the invading enemy force. His definition should be accepted by all parties engaged in the CFE talks as the first and fundamental principle of truly defensive doctrines and strategies. Likewise it can also be adopted elsewhere in the world. Any resort to initial military action beyond political borders, including preemptive or preventive measures in acute states of tension, would be ruled out as deliberate options. But the problem with doctrines and strategies is that they may be of only declaratory value or may be subject to rapid change as long as military means are available for waging war. Also, the principle of awaiting the enemy's thrust does not by itself limit the size and quality of potentials required, and does not therefore exclude any of the possible ways of conducting defence on the operational and tactical levels.

However, if stability and security are at stake, the operational modes of defence adopted by opponents are more important than their military doctrines. The modes may be threatening or not, and they may contribute to stability or give rise to perceptions of instability. Again one can learn from Clausewitz, who distinguished between four options of the defender:

- (a) To attack the enemy immediately at the outset of his penetration into the theatre of war;
- (b) To occupy positions close to the border, and to attack the invader upon his arrival in front of those positions;
- (c) To conduct genuine defence operations from close-to-border positions, including counter-attack actions;
- (d) To withdraw from the border and to initiate final resistance in the central parts of the country.

For Clausewitz, defence was, other things being equal, the stronger form of combat. Consequently, he favoured option (d) in which the aggressor would be subject to attrition before encountering maximum opposition by the defender.

For this analysis, Clausewitz's options may be translated into modern experience.

A combination of options (a) and (b) can be found in the traditional offensive defence concept of the WTO. This called for reliably superior potentials suited to invading the opponent's territory and overcoming any resistance. However, the very existence of superior offensive capacities must be perceived by the weaker side as threatening, and will certainly not support the cause of stability. Offensive defence concepts cannot, therefore, be allowed to guide either of the opposing parties. Apparently this is now being recognised by the WTO countries, which claim they are about to modify their operational defence concepts, stressing their defensive character.

Option (c) may be recognised in NATO's forward defence concept. This is a purely defensive principle. NATO has plans neither for launching preemptive or preventive strikes nor for occupying an aggressor's territory, and it is prepared to fight on its own soil. Forward defence aims at limiting damage to alliance countries and populations, and at denying easy success to the attacker and avoiding any but temporary and tolerable losses of terrain. This requires conventional means and procedures appropriate for initiating cohesive and close-to-border defensive operations immediately at the outset of aggression, for compelling the attacker to cease aggression and to withdraw, and for regaining lost territories by counter-attack operations in order to re-establish the *status quo ante*. Early termination of war is another essential of NATO's strategy. If this cannot be achieved by conventional forward defence, the alliance is prepared for deliberate nuclear escalation.

For the Western alliance, lacking as it does sufficient space for mobile defensive operations in depth and being dependent on indigenous industrial and personnel resources as well as on public support of its defence efforts, there is probably no better choice than forward defence. If effectively implemented, the benefit of this concept is threefold: (a) it contributes to deterrence and prevention of war; (b) it may guarantee maximum security of the defender in case of war; and (c) it does not compromise anyone except the aggressor.

Therefore, as long as vital political opposition continues to be the determinant factor in inter-alliance or interstate relations, forward defence may be a useful concept not only for NATO but also for the WTO, and for any country.

Clausewitz's option (d) comes close to area defence concepts recently developed by Western alternative defence proponents. The idea is to trade time and space for earlier success, to utilise the entire territory to be defended or large parts of it for exposing the invading force to

continuous attrition, and to submit the aggressor to growing difficulties resulting from extended lines of communication. This was a useful strategy of Russia in the Napoleonic war, and for the Soviet Union in the Second World War. From a purely war-fighting point of view, it might be an appropriate concept for future wars also, but for the following political and military reasons it is unacceptable to the West.

First, the adoption of an area or in-depth defence concept would probably not support the Western security policy directed at preventing war. On the contrary, it might be regarded as inviting rather than deterring an opponent's decision to wage war because reasonable prospects of territorial gains would remain.

Secondly, such an area defence concept would not meet any of the requirements of forward defence.

Thirdly, under contemporary conditions of technological progress, the geographical area available to NATO (in Central Europe the distance from the German Democratic Republic to the Strait of Dover does not exceed 600 kilometres) is simply not deep enough for effectively impeding an aggressor's capability to control the battle and to guarantee continuous combat and logistics support according to plan.

In summary, four conclusions regarding the fundamentals of defence apply:

- (a) On the politico-strategic level, the criterion of defence is to await aggression;
- (b) On the strategic-operational level, a forward defence concept appears to be a solution acceptable to any alliance or State;
- (c) On the operational-tactical level, defensive and (counter-) offensive actions will continue to be elements of the defensive battle;
- (d) Force strengths and structures of alliances and States must be tailored in such a way as to render feasible implementation of conclusions (b) and (c), while simultaneously reducing the risks of deliberate violation of conclusion (a).

A Possible Definition

The fourth point is crucial, but problematic. The core issue is how to bring about an appropriate mix of offensive and non-offensive elements in stability-oriented defensive force postures. The specific problem is: How can capabilities for initiating aggression be eliminated or substantially reduced without simultaneously compromising effective

defence, which, in a forward defence concept, must rely on counter-offensive capabilities?

A key to harmonising these apparently antagonistic goals has been repeatedly presented by, among others, An-drei A. Kokoshin, Deputy Director of the Soviet Institute for United States and Canadian Affairs, in Moscow.

“In other words, WTO defensive capabilities must decisively exceed NATO’s offensive capabilities, while NATO’s defensive capabilities must decisively exceed WTO offensive capabilities. This would finally lead to a situation in which both sides’ defence would be superior to their offence.”

This is a perfect description of the principle of mutual superiority of defence, which is intended to bring about ideal military conditions in Europe, but is potentially applicable to other regions as well.

The following may be concluded provisionally from the previous analysis: minimum sufficient defence is based on forward defence concepts adopted by both of two opposing alliances or States, and is brought into effect at the lowest possible levels of military potentials; the latter are organised in such a way as to ensure mutual superiority of defence.

How to Achieve Minimum Sufficient Defence

The Flaws of an Arms Reductions Approach

Arms reductions may result either in asymmetries at lower levels or in numerical parities that put an end to previously prevailing asymmetries. The latter is the main issue in the current, first phase of the Vienna CFE negotiations, and this is one of the most important differences between the CFE talks and the mutual and balanced force reduction talks (that died unmourned in February 1989, after 15 years of unsuccessful effort). Asymmetrical arms reductions aiming at numerical parities have always been requested by the Western alliance. It is to the credit of Mr. Gorbachev that the East’s traditional demand for equal reductions was finally abandoned—a demand that would have resulted in consolidation of existing disparities and that was put forward for the last time in the WTO’s Budapest appeal of June 1986. But what is the advantage of numerical parities if, as in CFE, stability is at stake? At first glance the establishment of numerical parities of offensive means may appear to be an adequate solution, but closer analysis reveals two major deficiencies in this approach.

First, history shows that force ratios do not necessarily determine the outcome of military engagements. This was already recognised by Sun Tzu, the classical Chinese author of the fourth century B.C., who postulated that “in war, numbers alone confer no advantage. Do not advance relying on sheer military power.” In fact, the high resolve of political leaders and military commanders, favourable structures and deployment of forces, superior leadership qualities, a lead in combat preparedness, or resolute use of surprise and initiative are often decisive factors, and may even help inferior forces to gain victory in battles or in war. Among many other events, Hannibal’s triumph during the Battle of Cannae in 216 B.C., the German *Wehrmacht’s* victory against France in 1940, and Israel’s war of 1967 have proved that numerical superiority is no guarantee of military success. But if a conventional war of aggression can be initiated and won by the inferior side, then it is all the more true that numerical parity is no reliable basis for stability as long as one or both opponents maintain the means to launch an attack. Under conditions of political hostility and acute military tension, there may even be no situation less stable. In fact, the calibre of available forces is as important as their numbers, perhaps even more so.

Secondly, while the level of parity between two opponents would not in principle invalidate the option of initiating war, it might severely affect forward defence. This is due to the fact that the minimum of forces necessary for implementing this concept depends not solely on the strength of the potential aggressor but, to a considerable extent, on the length of the territory to be defended. For instance, cohesive forward defence of the 900-kilometre-long Central European front line between the Baltic and the Danube may not be feasible with fewer than 30 to 35 mechanised divisions of the traditional type. On the other hand, the availability of 30 to 35 mechanised divisions on each side would be regarded by both as a source of instability and insecurity.

The conflict between the goal of achieving incapacity for aggression through deep cuts in offensive potentials and that of maintaining the levels of forces required for forward defence cannot be resolved solely through arms reductions. Eliminating existing disparities of offensive potentials is therefore a useful security-oriented step and clearly to the benefit of the weaker side, but not a conclusive remedy for the fundamental stability problem. The flaws of a purely parity-oriented arms control approach have been recognised by the CFE participants. Besides arms reductions, confidence-building and “stabilising” measures are on the negotiation list, with the latter comprising primarily restrictions

on deployment and on states of readiness of offense-oriented armaments. These provisions are suitable for increasing warning time and thus for severely reducing or even eliminating surprise attack capabilities. However, while violations may not occur unobserved, stabilising measures are rather easily reversed in fairly short periods of time and will therefore not eliminate the capability to launch aggression.

Characteristics of a Solution

What is necessary is agreement on, and realisation of, force structures which comply with the demand for mutual superiority of defence and which cannot be reversed in acute states of tension. Since it is obvious that a quantitative parity-oriented arms control approach cannot adequately satisfy both demands, a qualitative approach should be applied in addition, aiming at restructuring the armed forces in such a way as to give them an invariably defensive character. Such structures would comprise two discernible components:

- (a) Strong defence-oriented components best suited for retaining terrain but unsuited for operational offensive action, and clearly exceeding the remaining offensive capacities of the opponent without exceeding the minimum required for implementing forward defence;
- (b) Relatively weak offence-oriented counter-attack elements limited to minimum levels sufficient for supporting forward defence, but insufficient for aggression.

The crucial problem remaining is the conversion of the theoretical approach into military posture. Obviously, while any weapon may be used offensively the same is true for any military formation. Non-offensiveness is therefore plainly Utopian. What may be achieved at best is some approximation to non-offensiveness, by eliminating capabilities for launching rapid and far-ranging thrusts. Based on the assumption that weapons may be either more offensive or more defensive, the selected weapons mix is of decisive significance.

Ground Forces

Defence-oriented light elements would be used to initiate defensive operations close to the borders immediately at the outset of aggression and to impose maximum attrition upon the invader by fire. Since these forces are to be unsuited for offensive operational action, armour and mobility must be restricted. Therefore, light forces should be composed predominantly of barrier engineering, light anti-tank and non-armoured

infantry units, in this order of priority. Artillery and anti-tank helicopter units would be required, in addition to some mechanised elements which are indispensable for effective defence. While the number of major light units (e.g., divisions), armoured combat vehicles, artillery pieces and anti-tank helicopters should be negotiated between opponents and limited according to the principle of minimum sufficiency for defence, items of typical light equipment (e.g., mines of any kind or portable anti-tank weapons) may be left to the decision of each side, based on specific features of the terrain and individual tactical rules. Absolute numbers cannot be proposed in advance. However, by approximation, one light division might be sufficient for defending a 50-kilometre sector in Europe, and fewer than 200 armoured combat vehicles—corresponding to 27 to 38 per cent of the main battle tanks plus mechanised infantry combat vehicles presently available to mechanised divisions in West and East—well distributed between the various levels of command might suffice to provide each light division with the minimum of tactical flexibility required in combat.

The counter-offensive components indispensable for implementing a forward defence concept may be more easily projected. Their primary mission would be to react as heavy reserve forces aiming at the final destruction of previously reduced elements of the aggressor and at restoring the integrity of the defender's territory by regaining lost terrain. In tactical or operational crises they may be used in blocking operations. They must be capable of rapid cross-country movements, on short notice, by day and night and under enemy fire. They have to rely on fire, mobility and armour, and should therefore correspond to the types of mechanised forces presently available to NATO and the WTO, and to most other armies as well. Ideally, opposing States or alliances should have at their disposal equal numbers of equally sized heavy units, limited to the minimum necessary and sufficient for fulfilling their classical reserve forces' roles.

In order to meet the requirement of mutual superiority of defence, their total strengths should not exceed the fourth part of the ground forces permitted to each opponent. It is certainly difficult to evolve absolute numbers of formations and their main items of equipment without the support of computer war-gaming, but one could tentatively say that one heavy unit disposing of a maximum of 200 main battle tanks and 160 mechanised infantry combat vehicles could be a sufficient reserve force for each 100-kilometre sector of the territory to be defended.

Air Forces

For air forces, arms control objectives should correspond to those applied to ground forces. Since both sides already have at their disposal considerable air defence capabilities, mutual superiority of defensive means and minimum sufficiency for defence may be achieved primarily through reductions of existing offensive air assets. But what does sufficiency mean for offensive air power?

- (a) If options of surprise attack by ground forces may be ruled out through arms control, there is probably no need for the defender to maintain air attack forces for initial quick reaction;
- (b) The introduction of defence-oriented ground forces in conjunction with deep cuts in offensive systems would significantly reduce the need for direct air support to ground forces in battle;
- (c) Modern air surveillance, target acquisition, data transmission and fire control techniques may allow for transferring traditional close air support and battlefield air interdiction tasks from air to ground forces. However, this does not apply to anti-tank helicopters.
- (d) Depending on the dimension of negotiated ground-force reductions, air interdiction and follow-on-forces attack, as well as the means required for their implementation, may become more or less superfluous.

Obviously, very deep cuts in air power are possible in an extended CFE process. This should even be made a deliberate goal, since offensive air assets may be easily used for surprise offensive action. However, due to their high speed and range, air forces cannot be restricted to specific regions. Since the super-Powers and other Western countries do have to secure some military out-of-area responsibilities, global aspects will have to be recognised on a selective basis. This will invariably limit prospects for air reductions.

Conclusion

Maybe East and West are about to restrict fundamentally the traditional role of military power as a means for accomplishing political objectives in their inter-alliance relations. Common adoption and realisation of the principles described for minimum sufficiency for defence may help to pave the way for a profound and lasting reform of political relations. This may be achieved even if we accept that armaments

are symptoms rather than sources of the politico-ideological East-West conflict. However, for the time being a state of non-opposition may not be much more than a long-term objective. As long as political antagonism continues to be a determinant factor, nothing like assured conventional military stability can be attained, because non-offensiveness of military potentials is Utopian. This finally raises the issue of nuclear armaments.

Though not explicitly stated previously, one of the fundamental objectives of establishing a conventional minimum sufficiency defence regime for Europe is to reduce the need for early use of nuclear weapons in support of defence purposes. This may indeed be achieved in an extended CFE process. Nevertheless, nuclear weapons will continue to be the most effective stabilising factor for both the Western and the Eastern alliances, and the full range from theatre to strategic nuclear forces will be needed to support the credibility of nuclear deterrence. Reductions of existing nuclear potentials to very low levels of parity are necessary and possible in order to strengthen military stability and security. Here too, a sufficiency rule may apply, certainly not in the sense of sufficiency for defence, but in the sense of sufficiency for war prevention.

CONVENTIONAL PARITY AND CONVENTIONAL STABILITY

Among all aspects of conventional stability in Europe, the most important one is the interrelationship of the following terms: numerical reductions, numerical parity, and conventional stability. The establishment of stability between the two military blocs in Europe is at present considered a priority issue. However, it is necessary to stress that such stability in military relations between modern armies the conventional field, does not simply arise from a quantitative parity. With regard to ways of achieving military stability in Europe, there exists the common attitude of, the two military groups—the Warsaw Treaty Organisation (WTO) and the North Atlantic Treaty Organisation (NATO)—that relevant measures could include not only reductions but also limitations, provisions concerning redeployment and related measures, as well as the establishment of equal ceilings applicable to forces and equipment. This notion was formulated by the 23 countries in the mandate for the Vienna negotiations on conventional stability in Europe.

The doctrinal assumptions of both the WTO and the NATO countries, at least those which are publicly reported, do not contain anything that could be construed as aggressive. They are defensive assumptions.

However, as far as the mutual perceptions of States and alliances are concerned, it is the military/technical aspects of military postures, not the political aspects, that represent the critically important source of threat. The image of the enemy is shaped by the overwhelming influence of military doctrines and postures. In the perception of both alliances there has developed a deep-rooted view of a fundamental incompatibility between peaceful political declarations, on the one hand, and the offensive capabilities of their military potentials, on the other.

From the historical point of view, it is necessary to examine the following fundamental questions:

- (a) To what extent are the assumptions held still valid — assumptions dating back to the Second World War and reaffirmed in the post-war period — that offensive operations have the decisive role and that resolute offence alone can assure victory?
- (b) How far are the quantitative and qualitative parameters of armed forces, their structure, deployment, command system, logistics and training still subordinated to the theory of the decisive role of offensive operations?
- (c) To what extent do the principal elements of the notion of “victory” represent aspirations to destroy the enemy on his own territory and to occupy and hold his territory?

The above questions pertain to a problem of fundamental significance for the process of detente in Europe, namely, the readiness of the WTO and the NATO countries to replace the offensive structures of their armed forces and the corresponding content of their respective military doctrines/strategies. Consequences of the theory of the decisive role of offence have been a tendency towards highlighting the offensive means of warfare as well as a sustained aspiration to attain superiority in the means to conduct such combat operations, e.g., numerical superiority of troops and the principal types of weapons. Advances in military technology, in which priority has been given to offensive arms, have only served the purpose of consolidating the view that for victory there is no alternative to offensive operations. The process of the development of offensive capabilities of military potential, accompanied by declarations by both sides of peaceful intentions, only accelerates the arms race and increases the mutual sense of threat.

The functional dimension of the problem of the impact of conventional stability on the politico-military context of East-West relations in Europe includes the following aspects:

- *Conventional stability and crisis stability.* Crisis situations constitute the most credible, albeit most dangerous, test of the true character of the military postures of armed forces. Armed forces offer stability in crisis situations if they are structured in ways that do not encourage early resort to military means and do not unnecessarily precipitate mobilisation. One should also mention in this connection certain confidence- and security-building measures, for instance, zones of limited or dispersed armaments, which have the effect of prolonging the time of military preparations.
- *Conventional stability and stabilisation of the dynamics of armaments.* Military potential should be developed in such a way as not to generate stimuli for an arms race. This can be accomplished provided both sides predicate their conventional capabilities on the principles of defensive defence and reasonable sufficiency. One of the integral elements of the process leading towards conventional stability should be the institution of effective constraints on the development of new conventional technologies.
- *Military doctrines/strategies and conventional stability in Europe.* The starting-point in discussions of a prospective model of military stability in Europe should be the assessment of the military options that prevail in a given area, taking into consideration especially those elements which account for asymmetry in such options. Such an assessment, particularly in Central Europe, will be a difficult task, given the requirement that any assessment of military options must resolve the key question—whom and what to count? Should one count, for instance, the existing armed forces alone, with due reflection of plans for their operational use, or should one also count reinforcements envisaged for Central Europe? To what extent and according to what criteria should one take into account such elements as level of training, quality of equipment and weapons, combat readiness, and the diverse elements of allied credibility, to mention just a few of the most typical characteristics of military strength of a given State or alliance? The establishment of certain general criteria for WTO and NATO military options assessment is, therefore, a particularly critical—albeit complicated—problem.

The attainment of a credible military stability calls for comprehensive action covering three basic spheres: the evolution of military doctrines/strategies of a strictly defensive character; deep quantitative reductions to eliminate asymmetries; and thorough modifications of the structure of armed forces. The end result of such action should be the elimination of capabilities for surprise attack and for the conduct of large-scale offensive operations. The evolution of the military-technical components of military doctrines/strategies will play a key role in the process of attaining military stability.

The military/technical dimension of the problem concerns, in the first place, the relationship between offensive and defensive elements of military potential, the role of counter-attack and counter-offensive potentials in the defensive doctrines and strategy, and, finally, the relationship between balance, parity and stability.

The problem of the relationship between offensive and defensive elements is the most critical dilemma of defensive postures. The defensive character of a military posture cannot preclude the development by a given State or alliance of a counter-attack or counter-offensive capability. Those capacities can be pursued within the framework of defence. The only open issue is the problem of determining what offensive potential would not be incompatible with defensive doctrine. First of all, such a potential must not give rise to the concern of other States that there exists a possibility of aggression on the part of the given State or alliance. As far as conventional forces are concerned, the offensive character of military potential may be determined not only by quantitative ceilings and the qualitative parameters of weapons, but also by deployment, structure, logistics, command system and reserves. The distinction between defensive and offensive strategy as well as between defensive and offensive potential can be made at the operational and strategic level, but not at the tactical one.

The prevailing numerical relationship of forces of the two politico-military groupings in Europe has been one of balance in the sense that neither side can count on gaining a preponderance that could guarantee winning a war. However, despite the general balance of forces, the military situation obtaining in Europe cannot possibly be characterised as one of stability. The principal reason for the lack of military stability in Europe is the asymmetry in military options that is deep-rooted in the respective perceptions of the two sides. In both official pronouncements and relevant professional literature on the subject, there is an oft-repeated view that the prevailing relationship between

the approximate military potentials of the two alliances confirms the theory that military stability in general, and conventional stability in particular, is not functionally identical with numerical balance or parity. The numerical relationship of forces can in no case be the only, nor even the principal, criterion of the degree of stability. The urgent need to depart from numerical comparison, as the key premise of conventional stability, is now fully appreciated by the politico-military leadership circles of both alliances.

The necessity of bringing about structural changes of military potentials to make them more defensive—as yet another important premise of such stability—is also being increasingly recognised. Mutual readiness of the two sides to seek accommodation and give up offensive options is, therefore, a fundamental pre-condition for effective negotiations to elaborate a prospective model of conventional stability. Such stability, based on reduced total potentials, but including developed defensive structures, should be the most sought-after goal in the efforts of the two politico-military groupings in Europe. One should underline here the pressing need for doctrinal and structural change on both sides because unilateral steps are clearly insufficient. Radical reductions, removal of the existing disproportions and asymmetries, and structural and doctrinal modifications should result in eliminating the capacity for surprise attack on both sides and their respective abilities to conduct large-scale offensive operations. Structural incapacity for surprise attack and for large-scale offensive operations appears, therefore, to represent the basic element of conventional stability.

The desirable, broad interpretation of the term “structural incapacity for attack” could include the following criteria:

- Incapacity for offensive operations, i.e., invasion of the enemy’s territory and seizure thereof;
- Incapacity for counter-attack aimed at the seizure of the enemy’s territory;
- Incapacity for deep strikes into the enemy’s territory even if there is no intention to seize the territory.

In the narrow sense, structural incapacity for attack means the possession by both sides of capabilities that serve the objectives of military dissuasion and sufficient defence and whose organisation, structure, weaponry, doctrines and deployment preclude the possibility of launching surprise attacks and the pursuit of offensive operations.

Such a concept of structural incapacity for attack is the crux of the Jaruzelski plan. Modifications to WTO military doctrines and strategy should aim at preventing war by achieving the lowest level of forces sufficient for defence. To attain this objective it is necessary to carry through a radical reconstruction of traditional strategy, operational plans and tactics. According to WTO declarations and the relevant literature, “reliable defence” or “reasonable sufficiency” mean the minimum number of the highest-quality armed forces and armaments necessary for reliably ensuring a country’s defence. It would seem that “defensive sufficiency” can be defined as presupposing:

- (a) The commitment of each side not to be the first to launch an attack;
- (b) The harmonisation of structures of armed forces, groupings and deployments with the task of defence;
- (c) The reduction of armed forces and conventional weapons to a level at which neither side would be capable of launching offensive action, while ensuring a reliable defence;
- (d) A strict monitoring of the reduction of armed forces and weapons as well as of the military actions of the two sides.

As unilateral implementation of the principle of defensive sufficiency forces is practically impossible, such sufficiency must, therefore, be based on a mutual process and depend on the nature of the military threat.

One could add the following four specific elements compatible with the principle of defensive sufficiency:

- (a) A non-offensive structure of the armed forces;
- (b) Upper limits on offensive systems;
- (c) Deployment changes with a view to fulfilling strictly defensive tasks;
- (d) Changes in the mobilisation systems and a reduced arms production output.

The adoption by both alliances of the principle of reasonable sufficiency, even with differences of interpretation, would certainly have far-reaching consequences for the content of military doctrine itself, for strategic, operational and tactical assumptions, and for the size, quality and structure of military potentials. The adoption of the principle of sufficiency must result, above all, in a substantive revision of the interpretation of the term “victory”, that is to say, in abandoning

any attempt to destroy the enemy on his own territory and to occupy that territory as well as in confining the objectives of counter-attack to the restoration of the *status quo ante*. Such an interpretation of the notion "victory" would be the direct consequence of depriving the military potentials of both alliances of their capabilities to launch attacks against enemy territory, even if there was no intention to occupy and hold that territory.

The problem of the evolution of military doctrines towards a strictly defensive mode is undoubtedly bound to become one of the most significant elements in the process of lowering the level and changing the structure of military confrontation in Europe. The development of full compatibility between the peaceful, defensive character of political aspects of the military doctrines, on the one hand, and all the military-technical elements of the military doctrines of the two alliances, on the other, has now become one of the fundamental conditions of demilitarising East-West relations.

Among the many important aspects of the interrelationship of conventional stability and emerging conventional technologies, two seem to stand out as especially important. The first one relates to the question of the interrelationship of military stability and transarmament-disarmament. The second one relates to the more detailed question of the consideration of specific new technologies as suitable for either offensive or defensive use.

Some critics of the idea of non-offensive posture put on record different objections alleging that the authors of this idea place too much emphasis on transarmament and do not link it with the achievement of arms reduction. Such objections draw attention, first of all, to the fact that in the process of transarmament the quantity of offensive arms would decrease but the numbers of defensive ones would significantly increase. In fact, what would happen would be that, with one system of weapons being replaced by another system, the intensity of the arms race would stay unchanged.

In connection with this, the theoretically most likely situation, one could legitimately ask whether it is indeed necessary for defensive postures in the future to be based upon existing conventional weaponry selectively reduced or whether they should rather be based on emerging conventional technologies. In the view of this author, the issue of the relative significance of new technologies should not be unduly exaggerated in the context of the adoption of purely defensive postures by the two military blocs. Technology must clearly take second place

to deep reductions and the restructuring of armed forces, as many of the existing systems can be effectively used also in non-offensive postures. The WTO countries consider that disarmament offers the most direct route towards implementing the concept of defensiveness, without calling for far-reaching conversion and modernisation plans. Defensiveness is not a concept necessarily associated with any specific weapons, but rather one that must be viewed in the context of the comprehensive defence system of a State, including military doctrine/strategy, kind of military training and deployment, numerical level and structure of forces. If the declared purpose of a change in the existing, more or less offensive, military postures is to establish a mutually agreed defensive posture on both sides, then it is necessary to achieve gradual reductions directed above all at the offensive capabilities of the respective forces, while leaving intact their existing defensive elements.

The present discussion in Europe on desirable transformations in the military realm of security concentrates on the following two problems of key importance to any model of defensive defence:

- (a) Should a model of defensive defence be developed by States engaged in their unilateral pursuits or should it emerge from negotiations?
- (b) What is the strictly military realm of structural incapacity for attack, i.e. what are the military criteria for defensive sufficiency?

The view—until very recently predominant in both official pronouncements and opinions aired by researchers—that disarmament measures must be negotiated has been markedly altered mainly as a result of political decisions made by some countries to unilaterally reduce and restructure their military potentials. However, the position has been maintained that while unilateral measures are possible and necessary, they are not sufficient for the purpose of achieving the major objectives. It is quite natural that there has been an exchange of opinions, in which the military has played a special role, on how far the unilateral measures can go without upsetting defensive effectiveness. One of the points raised in the course of such debates is that arrival at a certain stage in reductions and restructuring is going to entail the need for the two sides to co-operate in promoting disarmament projects, including negotiations, for it is only through bilateral actions that the defensive may be distinguished from the offensive. Only such sizes and structures of military potentials as are seen as defensive by both the WTO and NATO will be genuinely defensive. It will therefore be imperative to

work out common criteria for the assessment of military options and potentials. This holds true also for the principle of reasonable defensive sufficiency.

There is no other way to effect profound alterations in existing threat assessments than to abandon the perception of military potentials as threat elements. A related aspect is the proper appreciation of the impact that each bloc's perceptions of the other's strength and military options have upon armaments policies and the evaluation of the role that changes in the structure of forces and weaponry will play in achieving the desired political effect, i.e., a substantial reduction of the level of military confrontation. The crux of all these approaches is the relationship between the so-called non-provocative nature of the structure of forces, their deployment and weaponry, on the one hand, and the capacity for curbing the arms race and preventing crises from developing into major armed conflicts in Europe, on the other.

The socialist States are now well aware that the establishment of mutual structural defensiveness represents a basic prerequisite for progress in demilitarising East-West relations. The demilitarisation and related democratisation of overall international relations will pave the way for a revision of the philosophies governing the activities of the military-political blocs, a revision entailing a re-interpretation of their objectives, structures, etc. This is a likely scenario of future developments following the establishment of defensive structures in the military potentials in Europe.

TABLE OF WORLD MILITARY EXPENDITURE, 1980-89

SAADET DEGER AND SOMNATH SEN, ASSISTED BY CARL-GUSTAF LAGERGREN, PHITSAMONE LJUNGQVIST-SOUVANNAVOG AND FREDRIK WETTERQVIST

Sources and Method are Explained in Appendix

TABLE 1

World Military Expenditure, in Current Price Figures

Figures are in local currency, current prices

		1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
NATO											
<i>North America</i>											
Canada	m. dollars	5499	6289	7655	8562	9519	10187	10811	11529	12180	12542
USA	m. dollars	143981	169888	196390	218084	238136	263900	282868	289391	294901	302294
<i>Europe</i>											
Belgium	m. francs	115754	125689	132127	136615	139113	144183	152079	155422	150647	155164
Denmark	m. kroner	9117	10301	11669	12574	13045	13343	13333	14647	15620	15813
France	m. francs	111672	129708	148021	165029	176638	186715	197080	209525	215073	223868
FR Germany	m. D. marks	48518	52193	54234	56496	57274	58649	60130	61354	61638	63269
Greece	m. drachmas	96975	142865	176270	193340	271922	321981	338465	393052	479236	521209

		1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Italy	b. lire	8203	9868	12294	14400	16433	18584	20071	23788	26590	28653
Luxembourg	m. francs	1534	1715	1893	2104	2234	2265	2390	2730	3163	3142
Netherlands	m. guilders	10476	11296	11921	12149	12762	12901	13110	13254	13300	13583
Norway	m. kroner	8242	9468	10956	12395	12688	15446	16033	18551	18865	21117
Portugal	m. escudos	43440	51917	63817	76765	92009	111375	139972	159288	193864	207738
Spain	m. pesetas	350423	400940	465695	540311	594932	674883	715306	852767	835353	912173
Turkey	b. lira	186	313	448	557	803	1235	1868	2477	3789	6105
UK	m. pounds	10923	12004	14203	15605	17104	18156	18581	19125	19439	20803
WTO											
Bulgaria	m. leva	822	874	989	965	1093	1127	1404	1547	1751	1605
Czechoslovakia	m. korunas	21269	21349	22220	23332	24387	25512	26435	27362	28374	28193
German DR	m. marks	9875	10705	11315	11970	12830	13041	14045	15141	15654	14871
Hungary	m. forints	17700	19060	20050	21900	22700	37700	38800	41500	49200	49200
Poland	b. zlotys	74	85	176	191	251	315	466	576	889	2154
Romania	m. lei	10394	10490	11340	11662	11888	12113	12208	11597	11552	11753
USSR	m. roubles	—	—	—	—	—	—	—	—	—	—
Other Europe											
Albania	m. leks	899	917	912	888	986	1700	978	1055	1080	1075
Austria	m. schillings	12423	12864	14140	14845	15843	17875	18768	18295	17650	17905
Finland	m. markkaa	3612	4128	5182	5656	6082	6555	7245	7636	8419	9192
Ireland	m. pounds	176	203	241	250	263	283	306	298	303	317
Sweden	m. kroner	15932	17467	18500	19550	21164	22762	24211	25662	27215	29399
Switzerland	m. francs	3152	3349	3727	3862	4009	4576	4282	4203	4458	4603
Yugoslavia	b. new dinars	76.3	101	118	155	247	465	979	1985	5838	14600

		1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Middle East											
Bahrain	m. dinars	59.2	80.7	106	62.3	55.6	56.6	60.4	60.3	70.4	70
Cyprus	m. pounds	10.9	17.5	17.9	19.1	19.9	18.5	13.7	16.7	20.4	—
Egypt	m. pounds	—	1238	1435	1801	2173	2108	2493	2742	2862	3462
Iran	b. rials	364	346	341	340	363	455	486	459	505	483
Iraq	m. dinars	990	1350	2400	3200	4300	4000	3600	4350	4000	—
Israel	m. new shekels	23.6	53.2	113	309	1626	4055	4936	5684	6093	7373
Jordan	m. dinars	136	160	179	196	197	219	243	253	256	—
Kuwait	m. dinars	257	291	370	416	434	469	430	380	408	438
Lebanon	m. pounds	980	654	1215	3554	2030	2448	3740	—	10640	—
Oman	m. riyals	407	522	581	670	728	745	665	584	519	510
Saudi Arabia	m. riyals	64076	75723	87695	84311	77817	71992	62418	60726	55750	—
Syria	m. pounds	8884	9653	10703	11309	12601	103000	14440	14327	16638	—
United Arab Emirates	m. dirhams	6330	7672	7268	7042	7093	7500	6900	5800	5800	5376
Yemen Arab Republic	m. rials	1978	2016	2933	3104	2585	2616	2808	3124	5533	—
Yemen PDR	m. dinars	42.6	56.0	57.5	65.8	67.0	65.3	68.8	72	76	—
South Asia											
Bangladesh	m. taka	2985	3210	4190	5080	5325	5790	7495	9080	9931	11200
India	m. rupees	38238	45371	53193	61945	70834	83651	105291	124965	129878	131500
Nepal	m. rupees	242	273	337	430	493	601	866	1153	1304	1565
Pakistan	m. rupees	14598	17731	22637	26915	30689	35110	39764	43997	49991	54479
Sri Lanka	m. rupees	971	1051	1117	1653	2194	5140	7926	10103	7190	7233

		1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Far East											
Brunei	m. dollars	410	416	480	530	534	617	700	568	—	—
Hong Kong	m. dollars	1353	1521	1478	1537	1523	1639	1530	1645	1676	—
Indonesia	b. new rupiahs	1708	2153	2613	2858	3106	2856	3089	3058	3164	3378
Japan	b. yen	2215	2388	2532	2712	2911	3118	3296	3473	3655	3865
Korea, North	m. won	2750	3009	3242	3530	3819	3935	3976	3971	3.863	4060
Korea, South	b. won	2252	2831	3163	3406	3573	3957	4372	4915	5753	6226
Malaysia	m. ringgits	3389	4693	4975	4820	4370	4320	4215	6142	4160	4638
Mongolia	m. tugriks	590	630	716	726	764	764	790	837	900	850
Myanmar (Burma)	m. kyats	1491	1712	1643	1630	1760	1973	1858	1875	—	—
Philippines	m. pesos	5829	6746	7778	8530	8288	7827	8662	9268	10972	16447
Singapore	m. dollars	1259	1507	1659	1640	2204	2516	2403	2439	2659	2920
Taiwan	b. dollars	96.5	117	136	139	138	152	158	164	179	186
Thailand	m. bant	34625	37375	41250	45875	49500	52275	51825	53125	54655	57176
Oceania											
Australia	m. dollars	3247	3767	4371	4992	5601	6298	6932	7305	7535	7715
Fiji	m. dollars	4.4	3.6	4.2	4.7	4.5	4.5	4.8	9.1	10.3	11.6
New Zealand	m. dollars	426	549	628	656	724	825	1017	1211	1340	1404
Africa											
Algeria	m. dinars	3417	3481	3893	4477	4631	4793	5459	5805	6070	6756
Angola	m. kwanzas	15060	15060	15060	23295	31943	34306	34572	—	26161	23438
Benin	m. francs	4700	5400	7821	9500	9280	10190	10610	9367	11 420	10 405
Botswana	m. pulas	26.9	28.5	25.2	28.2	34.9	41.7	64.5	124	90.1	—
Burkina Faso	m. francs	7471	9216	10800	11170	11780	11810	17724	15241	16003	—
Burundi	m. francs	2500	2700	3300	3200	3900	4200	4780	3910	3198	4414

		1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Cameroon	m. francs	19540	21415	41015	63105	73658	81920	86905	83150	77889	50000
Cent. Afric Rep.	m. francs	2816	4029	5000	6500	6500	6189	5892	5610	—	—
Chad	m. francs	—	—	—	15000	17496	17000	16850	10307	20000	—
Congo	m. francs	10050	11250	16500	18600	21596	25000	25625	26200	20440	23580
Cote d'Ivoire	m. francs	26643	25000	28400	29658	30706	31320	33547	35336	36250	37193
Ethiopia	m. birr	744	760	802	845	897	923	972	1182	1407	1687
Gabon	m. francs	18600	25600	29100	33000	35100	42900	47100	43407	40000	40680
Ghana	m. cedis	175	488	587	894	1605	3432	4605	6659	4603	8028
Kenya	m. shillings	2016	2182	2662	2778	2523	2395	3342	3909	3945	4328
Liberia	m. dollars	27.1	51.6	46.9	25.3	25.2	24.4	23.0	25.8	27.4	—
Libya	m. dinars	1058	1310	1330	1107	1096	1096	819	549	582	—
Madagascar	m. francs	19315	23500	27200	29600	31730	33520	39830	39200	39200	—
Malawi	m. kwachas	43.2	36.0	29.0	26.1	26.6	28.6	46.1	47.8	61.6	71.5
Mali	m. francs	8100	8600	9700	10200	11100	13400	13000	13 300	12300	23000
Mauritania	m. ouguiyas	3700	3293	2931	2639	—	—	—	—	—	—
Mauritius	m. rupees	42.6	47.7	30.8	34.4	36.5	36.1	36.3	38.5	64.9	818
Morocco	m. dirhams	4400	5047	5814	4675	4960	6453	6837	7190	7630	—
Mozambique	m. meticais	4419	5741	6900	8300	10300	10300	11 214	29 600	50 400	80 000
Niger	m. francs	3867	4286	4232	4389	4775	5075	5325	5175	—	—
Nigeria	m. nairas	1352	1319	1113	1179	928	976	957	810	1270	1034
Rwanda	m. francs	2027	2500	2622	2693	2500	2760	3050	2979	2800	—
Senegal	m. francs	19870	21565	23505	25110	27046	28235	28490	28784	29630	28476
Sierra Leone	m. leones	14.1	17.5	17.9	18.6	23.3	29.4	64.5	101	125	161
Somalia	m. shillings	601	824	826	1300	1786	1751	2300	3800	3500	—
South Africa	m. rands	2419	2615	2967	3314	3922	4414	5412	6717	7835	9873

		1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Sudan	m. pounds	132	131	139	212	361	468	562	723	968	1831
Swaziland	m. emalangeni	10.9	120	16.2	16.0	16.1	15.7	15.9	16.8	21.5	24.0
Tanzania	m. shillings	1688	2122	2433	2651	3201	4277	7073	11 025	16 250	21 574
Togo	m. francs	5155	6202	6138	6328	7007	8632	9200	13047	13047	13765
Tunisia	m. dinars	78.6	113	284	364	296	357	413	434	460	460
Uganda	m. shillings	29.6	54.1	82.3	144	327	782	1157	4805	8500	—
Zaire	m. zaires	430	316	873	723	1928	2013	2700	5000	6500	14 869
Zambia	m. kwachas	106	154	148	161	148	167	480	637	717	896
Zimbabwe	m. dollars	243	284	296	353	398	436	554	661	720	804
Central America											
Costa Rica	m. colones	265	317	528	928	1140	1202	1426	1504	1586	1660
Cuba	m. pesos	973	1011	1109	1133	1386	1335	1307	1300	1350	1377
Dominican Rep,	m. pesos	99	126	128	129	164	191	202	250	298	346
El Salvador	m. colones	254	322	395	442	534	630	964	885	—	—
Guatemala	m. quetzales	143	161	208	231	270	371	378	495	645	731
Haiti	m. gourdes	100	105	104	102	110	131	138	150	—	—
Honduras	m. lempiras	120	125	160	240	335	445	450	450	—	—
Jamaica	m. dollars	62.0	81.8	98.8	97.8	104	124	125	125	—	—
Mexico	b. pesos	24.7	37.9	47.4	90.3	181	297	470	894	1470	1673
Nicaragua	m. cordobas	1	1.3	1.7	3.4	4.9	26.8	91	921	93 827	77 721
Panama	m. balboas	42.2	46.5	55.0	60.0	88.0	92.0	105	105	113	76
Trinidad and Tobago	m. dollars	296	371	563	545	490	465	465	—	—	—
South America											
Argentina	m. australes	1.8	3.9	8.9	31.2	236	1387	2727	5863	28 224	300 000

		1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Bolivia	t. bolivianos	4.8	8.0	19.0	58.0	721	94 677	299 374	327 547	400 300	489214
Brazil	b. cruzados	0.2	0.3	0.8	1.4	4.7	16	45	131	1023	7458
Chile	m. pesos	72 525	94 810	117831	124901	182 203	194 877	258 675	277417	385 145	446 768
Colombia	m. pesos	29 023	35 830	44 661	69531	91753	105 092	135 712	176 989	265 484	398 226
Ecuador	m. sucres	5213	5848	6870	8833	12086	19743	25598	35442	52595	83839
Guyana	m. dollars	98	96	108	142	156	192	276	—	—	—
Paraguay	m. guaranies	7644	10581	11 566	11 676	12826	15937	20097	26885	32643	57978
Peru	m. intis	265	515	1480	2530	3875	11900	23900	37000	103842	800000
Uruguay	m. new pesos	2693	4770	5168	5877	7708	12831	22828	36831	59962	—
Venezuela	m. bolivares	6899	8952	9905	8488	9800	9457	10 520	15197	17 585	21 049

TABLE 2
World Military Expenditure, in Constant Price Figures Figures are in US \$m., at 1988 Prices and Exchange-Rates.

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
NATO										
<i>North America</i>										
Canada	7230	7353	8077	8534	9093	9362	9535	9747	9897	9928
USA	206 573	220955	240616	258828	270923	290026	305076	300890	294901	289139
<i>Europe</i>										
Belgium	4614	4657	4502	4323	4139	4092	4261	4287	4107	4116
Denmark	2235	2260	2323	2342	2287	2234	2153	2275	2320	2245
France	32 222	32 995	33 668	34 252	34 104	34 103	35 118	36 137	36 105	36410
FR Germany	33 807	34 216	33 786	34 054	33 712	33 796	34 719	35 320	35097	34955
Greece	2841	3360	3428	3128	3717	3688	3152	3144	3378	3286
Italy	14174	14269	15262	15585	16057	16634	16964	19199	20 429	20 821
Luxembourg	60	62	63	64	64	63	66	75	86	83
Netherlands	6510	6575	6555	6497	6608	6533	6633	6753	6729	6811
Norway	2422	2447	2545	2656	2558	2946	2853	3037	2895	3101
Portugal	1145	1142	1142	1099	1021	1036	1166	1213	1347	1299
Spain	6423	6413	6518	6738	6669	6952	6772	7672	7171	7434
Turkey	1876	2316	2528	2393	2325	2467	2772	2647	2664	2715
UK	31 100	30 549	33 283	34 981	36511	36 548	36 173	35 713	34 629	34 466
EC	135 656	137 000	141 039	14 3 541	145 352	146 151	147 669	152253	151 860	152388
WTO										
Bulgaria	678	718	810	780	877	800	1071	1180	1337	122
Czechoslovakia	3491	3473	3454	3589	3716	3838	3962	4097	4241	4207
German DR	4685	5068	5357	5667	6075	6181	6656	7176	7419	7048

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Hungary	1551	1597	1571	1599	1531	2375	2321	2285	2343	2006
Poland	4389	4117	4262	3796	4332	4730	5945	5863	5657	5431
Romania	1597	1578	1458	1425	1437	1470	1483	1407	1402	1426
USSR	—	—	—	—	—	—	—	—	—	—
Other Europe										
Albania	150	153	152	148	164	283	163	176	180	179
Austria	1342	1300	1355	1378	1392	1521	1571	1510	1429	1410
Finland	1467	1496	1714	1726	1733	1765	1895	1919	2013	2054
Ireland	525	502	509	478	463	472	492	465	462	462
Sweden	4596	4539	4380	4253	4263	4268	4357	4431	4442	4504
Switzerland	2765	2761	2907	2926	2949	3255	3022	2926	3047	3055
Yugoslavia	2571	2431	2151	2019	2080	2272	2520	2314	2314	—
Middle East										
Bahrain	185	226	273	156	139	145	158	161	187	186
Cyprus	35	50	48	49	48	43	31	37	44	—
Egypt	—	5392	5442	5889	6070	5252	5013	4607	4089	4222
Iran	16108	12321	10230	8523	8082	9705	9339	7679	7353	—
Iraq	12306	14007	21952	28596	31590	23506	16531	17073	12868	—
Israel	6110	6887	7314	8000	8420	5249	4318	4134	3811	3849
Jordan	490	535	557	581	562	607	673	703	689	—
Kuwait	1181	1246	1470	1579	1629	1733	1574	1382	1463	1529
Lebanon	102	59	96	262	107	93	97	—	26	—
Oman	691	859	1016	1296	1478	1517	1730	1189	1350	1326
Saudi Arabia	16114	18557	21614	20899	19513	18666	16684	16384	14 887	—
Syria	3960	3635	3526	3511	3582	3152	2573	1601	1482	—

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
United Arab Emirates	1847	2088	1955	1966	2091	2211	2004	1587	1580	1454
Yemen Arab Republic	332	322	456	457	339	323	325	340	566	—
Yemen PDR	197	249	234	241	243	225	224	221	220	—
South Asia										
Bangladesh	219	203	235	261	247	243	283	313	313	311
India	5547	5819	6325	6582	6955	7778	9006	9822	9332	9030
Nepal	23	23	26	29	33	37	45	54	56	62
Pakistan	1350	1466	1767	1974	2122	2299	2516	2658	2777	2803
Sri Lanka	71	65	63	82	93	214	306	362	226	205
Far East										
Brunei	263	245	265	290	283	319	356	287	—	—
Hong Kong	313	309	271	256	235	245	223	226	215	—
Indonesia	2012	2596	2505	2451	2410	2116	2163	1960	1877	1876
Japan	20 099	20 628	21 291	22 400	23 504	24 672	25 924	27 289	28 521	29350
Korea, North	1279	1400	1508	1642	1776	1830	1849	1847	1797	1888
Korea, South	4924	5103	5318	5535	5675	6135	6593	7195	7865	8030
Malaysia	1689	2132	2129	1990	1742	1716	1664	2406	1589	1725
Mongolia	197	210	239	242	255	255	263	279	300	283
Myanmar (Burma)	461	528	481	452	465	488	421	340	—	—
Philippines	797	815	854	851	550	422	463	478	520	708
Singapore	739	816	866	845	1107	1258	1218	1230	1321	1414
Taiwan	4460	4432	5000	5043	5007	5526	5704	5891	6348	6346
Thailand	1886	1808	1895	2031	2174	2240	2182	2181	2161	2160
Oceania										
Australia	4827	5070	5309	5524	5934	6272	5334	6166	5910	5692
Fiji	5	4	4	4	4	4	4	7	7	8

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
New Zealand	687	768	756	735	765	754	822	845	879	879
Africa										
Algeria	1144	1016	1066	1138	1107	1036	1050	1040	1026	1047
Angola	502	502	502	777	1065	1144	1152	—	872	781
Benin	34	29	40	44	41	43	43	35	38	32
Botswana	33	30	24	24	27	30	42	75	50	—
Burkina Faso	36	42	43	41	42	39	60	53	54	—
Burundi	31	30	34	31	33	34	38	29	23	23
Cameroon	134	133	225	296	311	341	336	303	262	154
Central African Rep.	14	18	20	23	22	19	18	18	—	—
Chad	—	—	—	61	59	54	62	39	67	—
Congo	62	60	78	81	84	91	91	91	69	76
Cote d'Ivoire	135	117	124	122	121	121	121	127	122	123
Ethiopia	488	469	475	496	486	420	490	611	680	780
Gabon	93	117	114	117	118	134	139	129	134	142
Ghana	18	23	23	16	20	39	42	44	23	35
Kenya	251	243	247	231	190	160	214	238	222	222
Liberia	38	67	58	30	30	29	26	28	27	—
Libya	3596	4452	4520	3762	3725	3725	2784	1866	1978	—
Madagascar	53	50	44	40	39	37	39	33	28	—
Malawi	60	44	33	26	22	21	30	25	24	25
Mali	38	39	42	42	44	51	47	47	41	74
Mauritania	95	71	56	50	—	—	—	—	—	—
Mauritius	5.5	5.3	3.1	3.3	3.2	3.0	3.0	3.1	4.8	5.4
Morocco	980	999	1042	788	744	898	876	896	929	—

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Mozambique	59	61	58	55	53	42	36	75	101	126
Niger	17	15	13	14	14	15	16	17	—	—
Nigeria	1134	914	717	616	347	346	322	248	281	—
Rwanda	38	45	42	40	35	38	43	40	37	—
Senegal	117	120	111	106	103	95	90	95	100	—
Sierra Leone	24	24	19	12	8.9	6.4	7.7	4.3	4.0	4.1
Somalia	64	60	49	57	41	29	28	36	21	—
Somh Africa	3206	3003	2970	2956	3137	3036	3139	3355	3468	3802
Sudan	242	194	163	191	242	216	208	239	215	272
Swaziland	14	13	15	13	12	9.7	8.8	8.3	9.5	9.5
Tanzania	143	144	127	109	98	97	121	146	164	170
Togo	25	25	22	21	24	30	31	44	44	46
Tunisia	175	231	509	599	449	502	549	538	536	501
Uganda	72	82	83	116	185	190	104	128	80	—
Zaire	62	34	69	32	57	48	44	46	35	53
Zambia	110	140	120	109	84	69	130	121	87	83
Zimbabwe	374	387	364	353	331	334	371	394	400	393
Central America										
Costa Rica	25	21	19	25	27	25	27	24	21	19
Cuba	1254	1303	1429	1460	1786	1721	1685	1676	1740	1775
Dominican Republic	62	73	69	66	66	56	54	58	49	—
El Salvador	199	219	241	238	258	249	288	212	—	—
Guatemala	134	135	174	184	208	241	180	209	246	258
Haiti	29	28	26	23	23	25	25	31	—	—
Honduras	94	89	105	145	194	249	241	235	—	—

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Jamaica	32	38	43	38	32	30	26	25	—	—
Mexico	1080	1296	1015	959	1161	1208	1027	842	647	615
Nicaragua	265	279	292	445	473	810	352	352	348	—
Panama	50	51	58	62	90	93	106	105	113	76
Trinidad and Tobago	177	194	264	222	176	155	144	—	—	—
South America										
Argentina	5414	5711	4927	3897	4056	3087	3194	2966	3225	3000
Bolivia	170	243	238	202	182	201	169	162	170	—
Brazil	4609	3362	4532	3276	3703	3857	4428	3908	3899	3691
Chile	1276	1394	1574	1313	1597	1307	1451	1299	1572	1568
Colombia	499	484	483	629	715	660	716	758	887	1053
Ecuador	147	142	143	124	129	165	174	186	174	158
Guyana	47	37	34	40	35	37	50	—	—	—
Paraguay	57	69	71	63	58	57	55	60	59	59
Peru	422	492	785	671	487	568	641	534	806	621
Uruguay	223	294	268	205	173	167	169	166	167	—
Venezuela	1489	1663	1678	1354	1392	1207	1204	1357	1213	752

TABLE 3
World Military Expenditure as a Percentage of Gross Domestic Product

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
NATO										
<i>North America</i>										
Canada	1.7	1.8	1.8	2.0	2.1	2.1	2.1	2.1	2.1	2.0
USA	5.0	5.4	5.7	6.3	6.5	6.4	6.6	6.7	6.4	6.1
<i>Europe</i>										
Belgium	3.3	3.3	3.4	3.3	3.2	3.1	3.0	3.0	2.9	2.7
Denmark	2.3	2.4	2.5	2.5	2.5	2.3	2.2	2.0	2.1	2.2
France	3.9	4.0	4.1	4.1	4.1	4.0	4.0	3.9	4.0	3.8
FR Germany	3.3	3.3	3.4	3.4	3.4	3.3	3.2	3.1	3.1	2.9
Greece	6.3	5.7	7.0	6.8	6.3	7.1	7.0	6.2	6.3	6.4
Italy	2.4	2.1	2.1	2.3	2.3	2.3	2.3	2.2	2.4	2.5
Luxembourg	0.9	1.0	1.1	1.0	1.1	1.0	0.9	0.9	1.1	1.1
Netherlands	3.2	3.1	3.2	3.2	3.2	3.2	3.1	3.1	3.1	3.0
Norway	3.1	2.9	2.9	3.0	3.1	2.8	3.1	3.1	3.3	3.2
Portugal	3.5	3.5	3.5	3.5	3.3	3.3	3.1	3.2	3.1	3.2
Spain	2.1	2.3	2.4	2.4	2.4	2.4	2.4	2.2	2.4	2.1
Turkey	4.3	4.3	4.9	5.2	4.8	4.4	4.5	4.8	4.2	3.8
UK	4.4	4.7	4.7	5.1	5.1	5.3	5.1	4.9	4.6	4.3
WTO										
Bulgaria	3.1	3.0	3.0	3.3	3.1	3.3	3.4	4.0	4.2	4.4
Czechoslovakia	3.2	3.1	3.1	3.1	3.2	3.3	3.3	3.4	3.4	3.4
German DR	4.1	4.2	4.4	4.5	4.5	4.7	4.6	4.8	5.0	5.0
Hungary	2.4	2.5	2.4	2.4	2.4	2.3	3.6	3.6	3.4	3.5

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Poland	2.9	3.0	3.1	3.2	2.8	2.9	3.0	3.6	3.4	3.0
Romania	2.0	1.7	1.6	1.5	1.5	1.4	1.4	1.3	1.2	1.2
USSR	—	—	—	—	—	—	—	—	—	—
Other Europe										
Austria	1.3	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.2	1.1
Finland	1.8	1.9	1.9	2.1	2.1	2.0	1.9	2.0	1.9	1.9
Ireland	1.8	1.9	1.8	1.8	1.7	1.6	1.6	1.6	1.5	1.4
Sweden	3.1	3.0	3.0	2.9	2.8	2.7	2.6	2.6	2.6	2.5
Switzerland	1.9	1.9	1.8	1.9	1.9	1.9	2.0	1.8	1.7	1.7
Yugoslavia	4.7	4.9	4.6	4.0	3.8	3.7	3.9	3.9	3.6	3.6
Middle East										
Bahrain	5.3	4.8	5.9	7.5	4.3	3.8	4.2	5.1	5.3	5.0
Cyprus	2.0	1.4	2.0	1.7	1.7	1.5	1.2	0.9	0.9	1.0
Egypt	2.9	—	6.5	6.3	6.7	6.9	5.8	6.1	6.2	—
Iran	6.3	5.4	4.3	3.4	2.6	2.5	3.0	—	—	—
Iraq	6.9	6.3	12.3	19.0	24.4	29.1	27.5	—	—	—
Israel	26.1	25.0	23.5	19.0	20.2	21.4	14.4	11.3	10.2	9.1
Jordan	17.7	13.8	13.7	13.5	13.8	13.1	13.6	14.8	15.0	15.0
Kuwait	3.3	3.5	4.4	6.0	6.8	6.8	7.9	8.6	7.0	7.3
Lebanon	4.1	4.1	2.4	4.3	12.0	—	—	—	—	—
Oman	20.9	19.7	21.0	22.2	24.5	23.9	21.6	23.8	17.6	—
Saudi Arabia	21.1	16.6	14.5	21.1	20.3	20.9	22.0	22.4	22.7	—
Syria	16.0	17.3	14.7	15.6	15.4	16.7	15.6	14.4	11.3	—
United Arab Emirates	5.5	5.8	6.3	6.5	6.8	7.0	7.6	8.7	6.7	6.6
Yemen Arab Republic	20.9	15.0	12.6	14.7	14.2	10.4	8.4	7.3	7.2	—
Yemen PDR	17.5	17.8	19.7	18.7	19.1	17.7	16.7	—	—	—

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
South Asia										
Bangladesh	1.3	1.4	1.3	1.5	1.6	1.4	1.3	1.5	1.6	—
India	3.5	3.0	3.0	3.1	3.1	3.2	3.3	3.7	3.9	3.7
Nepal	1.0	1.0	0.9	1.1	1.2	1.2	1.3	1.6	1.8	2.2
Pakistan	5.6	5.7	5.9	6.6	6.9	6.8	6.8	7.3	7.1	6.9
Sri Lanka	1.5	1.5	1.2	1.1	1.4	1.4	3.2	4.4	5.1	3.2
Far East										
Brunei	6.1	3.9	4.5	5.3	6.5	6.5	7.7	—	—	—
Hong Kong	0.6	1.0	0.9	0.8	0.7	0.6	0.6	0.5	0.5	0.4
Indonesia	4.1	3.8	3.7	4.2	3.7	3.5	3.0	3.0	2.5	2.3
Japan	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0
Korea, North	10.4	10.7	11.5	11.8	12.3	12.0	—	—	9.5	8.7
Korea, South	5.1	5.9	6.0	5.8	5.3	4.9	4.9	4.7	4.5	4.6
Malaysia	5.5	6.4	8.1	7.9	6.9	5.5	5.6	5.9	6.1	6.3
Mongolia	—	—	—	—	—	—	11.2	11.0	11.3	11.7
Myanmar (Burma)	3.8	3.9	4.1	3.6	3.3	3.3	3.6	3.2	—	—
Philippines	2.4	2.2	2.2	2.3	2.2	1.5	1.3	1.4	1.3	1.3
Singapore	5.0	5.0	5.1	5.1	4.5	5.5	6.5	6.3	5.8	5.5
Taiwan	6.8	6.6	6.7	7.3	6.8	6.1	6.4	5.9	6.3	6.0
Thailand	5.4	5.1	4.8	4.9	5.0	5.0	5.0	4.7	4.3	4.0
Oceania										
Australia	2.4	2.6	2.6	2.7	2.8	2.8	2.8	2.8	2.6	2.4
Fiji	0.4	0.4	0.3	0.4	0.4	0.4	0.3	0.3	0.6	0.7
New Zealand	1.8	1.9	2.1	2.1	2.0	1.9	1.9	2.0	2.0	2.1

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Africa										
Algeria	2.1	2.1	1.8	1.9	1.9	1.8	1.7	1.7	1.7	1.5
Angola	14.0	12.8	13.8	11.9	16.5	22.0	28.4	28.4	—	21.5
Benin	1.9	1.9	1.8	1.9	2.2	2.0	2.0	1.9	—	—
Botswana	3.6	3.7	3.7	2.7	2.4	2.4	2.1	2.7	4.2	2.7
Burkina Faso	2.7	2.7	2.8	3.0	2.9	3.0	2.5	3.5	3.0	—
Burundi	2.6	2.9	3.0	3.5	3.1	3.2	3.0	3.4	2.7	2.2
Cameroon	1.5	12	1.1	1.7	2.2	2.1	2.2	2.1	2.1	—
Central African Rep.	2.0	1.7	2.1	2.0	2.6	2.3	2.0	1.8	1.7	—
Chad	—	—	—	—	7.0	7.8	5.7	6.0	3.8	—
Congo	3.7	2.8	2.1	2.3	2.3	2.3	2.6	4.0	—	—
Cote d'Ivoire	1.1	1.2	1.1	1.1	1.1	1.1	1.0	1.0	1.2	—
Ethiopia	8.8	8.5	8.4	8.4	8.4	9.0	8.9	8.9	10.6	10.0
Gabon	1.9	2.1	2.4	2.4	2.6	2.3	2.6	4.0	4.3	3.9
Ghana	0.5	0.4	0.7	0.7	0.5	0.6	1.0	0.9	0.9	0.5
Kenya	4.4	3.8	3.6	3.8	3.6	2.9	2.4	2.9	3.0	2.6
Liberia	1.5	2.8	4.8	4.3	2.3	2.4	2.3	2.2	—	—
Libya	14.2	10.0	14.0	15.0	13.0	14.5	15.2	12.7	—	—
Madagascar	2.9	2.8	3.0	2.7	2.4	2.3	2.2	2.2	1.8	—
Malawi	4.2	4.4	3.3	2.4	1.9	1.6	1.5	1.8	1.6	—
Mali	—	23	23	2.4	2.4	2.4	2.7	2.3	—	—
Mauritania	10.5	9.7	7.6	6.9	5.7	—	—	—	—	—
Mauritius	0.2	0.5	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2
Morocco	5.6	63	6.6	6.5	4.9	4.7	5.4	5.1	5.0	5.0
Mozambique	—	5.6	7.0	8.0	10.7	12.1	11.7	10.4	—	—

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Niger	0.7	0.7	0.7	0.6	0.7	0.7	0.7	0.8	0.8	—
Nigeria	2.5	2.5	2.3	1.8	1.9	1.3	1.2	1.2	0.7	0.9
Rwanda	1.8	1.9	2.0	2.0	1.9	1.6	1.6	1.9	—	—
Senegal	3.3	3.1	2.8	2.8	2.7	2.7	2.5	2.2	2.0	—
Sierra Leone	0.7	1.0	1.0	0.8	0.7	0.7	0.6	1.1	—	—
Somalia	6.8	4.9	4.3	3.4	3.8	2.7	1.8	1.8	1.8	—
South Africa	4.3	3.9	3.7	3.7	3.7	3.7	3.7	3.7	4.0	3.9
Sudan	2.0	2.3	2.0	1.7	2.1	2.9	2.6	2.1	—	—
Swaziland	2.3	2.1	2.2	2.9	2.6	2.3	1.8	1.7	—	—
Tanzania	7.6	4.0	4.3	4.2	3.9	3.8	3.8	4.7	4.7	—
Togo	2.2	2.2	2.4	2.3	2.2	2.3	2.6	2.5	2.6	—
Tunisia	2.2	2.2	2.7	5.9	6.6	4.7	5.2	5.9	5.5	5.3
Uganda	1.3	2.2	3.8	2.7	3.0	5.0	5.9	3.8	3.5	—
Zaire	3.0	2.5	1.3	2.8	1.2	1.9	1.4	1.3	1.5	1.5
Zambia	4.8	3.5	4.4	4.1	3.9	3.0	2.4	3.7	3.2	3.2
Zimbabwe	6.0	7.1	6.4	5.7	5.7	6.2	5.7	6.2	6.5	5.8
Central America										
Costa Rica	0.6	0.6	0.6	0.5	0.7	0.7	0.6	0.6	0.5	0.4
Cuba	10.5	9.9	8.8	9.1	8.8	10.1	9.6	10.2	10.7	11.3
Dominican Republic	2.0	1.5	1.7	1.6	1.5	1.6	1.4	1.3	1.3	1.1
El Salvador	1.8	2.8	3.7	4.4	4.4	4.6	4.4	4.9	3.8	—
Guatemala	1.7	1.8	1.9	2.3	2.6	2.9	3.3	2.4	2.8	3.2
Haiti	1.4	1.4	1.4	1.3	1.2	1.1	1.2	1.4	—	—
Honduras	2.2	2.4	2.3	2.8	4.0	5.2	6.4	6.0	5.5	—
Jamaica	0.9	1.3	1.6	1.7	1.4	1.1	1.1	0.9	0.8	—

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Mexico	0.6	0.6	0.6	0.5	0.5	0.6	0.7	0.6	0.5	—
Nicaragua	3.1	4.4	5.3	6.0	10.3	10.9	23.2	20.9	34.2	—
Panama	1.5	1.2	1.2	1.3	1.4	1.9	1.9	2.0	2.0	2.5
Trinidad and Tobago	1.9	2.0	2.3	2.9	2.9	2.6	2.6	2.7	—	—
South America										
Argentina	6.3	6.4	7.1	6.0	4.6	4.5	3.5	3.7	3.4	3.0
Bolivia	3.6	4.0	5.3	4.5	3.9	3.4	3.4	2.8	2.9	3.1
Brazil	0.9	1.3	1.3	1.6	1.2	1.2	1.1	1.2	1.1	1.1
Chile	7.0	6.7	7.4	9.5	8.0	9.6	7.6	8.0	6.8	7.8
Colombia	1.7	1.8	1.8	1.8	2.3	2.4	2.1	2.0	2.0	2.3
Ecuador	2.0	1.8	1.7	1.7	1.6	1.5	1.8	1.9	2.0	1.7
Guyana	5.1	6.5	6.0	7.5	9.7	9.2	9.8	12.4	—	—
Paraguay	1.3	1.4	1.5	1.6	1.4	1.2	1.1	1.1	1.1	1.0
Peru	3.9	5.3	6.0	8.5	8.1	5.6	6.4	6.6	5.0	2.5
Uruguay	2.4	2.9	3.9	4.0	3.2	2.6	2.4	2.3	2.1	2.1
Venezuela	2.4	2.7	3.1	3.4	2.9	2.4	2.0	2.1	2.1	1.9

Table 5A.1: Military expenditure figures are given in local currency at Current prices Figures for recent years are budget estimates.

Table 5A.2: This series is based on the date given in the local currency series, deflated to 1988 price levels and converted into dollars at 1988 period-average exchange-rates. Local consumer price indices (CPI) are taken as far as possible from *International Financial Statistics* (IFS). (International Monetary Fund: Washington, DC). For the most recent year, the CPI is an estimate based on the first 6-10 months of the year. For a few countries, where CPI is not available current prices are used. Period-average exchange-rates are taken as far as possible from the IFS. For WTO countries, purchasing power parties (PPP) and used.

Table 5A.1: The share of gross domestic product (GDP) is calculated in local currency. GDP data are taken as far as possible form the IFS. For some socialist economies, gross national product (GNP) or net material product (NMP) is used.

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THE INTERNATIONAL ARMS TRADE

During the past thirty-five years, the size and distribution of conventional arms transfers has been determined principally by two factors. First, the East-West confrontation—and in particular the adversarial nature of the Super-Power relationship—and secondly, the collective failure of all parties to manage or solve conflicts in the third world. Moreover, the arms trade has taken place in an international environment without any realistic prospect of conventional arms control.

A change in one of these areas would have an important impact on the international arms trade. In the period after 1987 there have been important changes in all of them. As a result, the pattern of future developments is unpredictable but could significantly alter the size and shape of the global arms market in the 1990s. A number of key questions currently have no answer.

Will the improvement in East-West relations produce a conventional arms control agreement and, if so, what will be the scope of that agreement? Can the conventional arms control process be confined to Europe when significant numbers of Asian and Middle Eastern countries are on the threshold of military programmes that will change the nature of their external relations both within their respective regions and with the super-Powers? How far will developments in several long-standing armed conflicts during 1988 and 1989 provide the framework for stable and durable political solutions to what have seemed intractable problems?

While the answers to these broad questions will affect the arms trade, controlling conventional military technology transfers is not currently a subject of any multinational negotiations. As a result, the future development of the global arms market will continue to be governed by factors beyond the control of any single Government.

Continuity and Change in the Global Arms Market

Looking at some indicators, one would be tempted to conclude that the global arms market during the 1980s has not been dynamic. Levels of military expenditure in industrialised countries and in the third world have stabilised during the second half of the 1980s and in some cases have begun to decline, at least in real terms. The overall size of the global arms trade has also remained stable in the 1980s, albeit at a high level relative to the 1970s. However, this picture masks important changes in the distribution of conventional military technology transfers.

Some of these changes are the end result of a process identified in the 1970s. Accounts of the arms trade published ten years ago focused chiefly on three developments: the proliferation of defence industrial capacities; the emergence of new sources of supply in the global arms market, whose policies were likely to be driven by commercial rather than political rationales; and the spread of ballistic missiles to Third World countries. While the same issues dominate current discussions of arms transfer, the international political context has changed significantly.

In the 1970s, the proliferation of military technology was seen as part of a wider diffusion of power. The growing number of new States, the failure of the United States to achieve its objectives in Vietnam and the British decision to withdraw permanent forces stationed "East of Suez" were seen as symptoms of a relative shift in military capability away from traditional power centres. Meanwhile, there were high expectations concerning the rate of economic growth of third world countries such as Argentina and Brazil.

In fact, while more difficult for a variety of economic and political reasons, military intervention by major Powers has remained a usable policy option in the 1980s. Between 1979 and 1989 the Soviet Union, the United States, the United Kingdom, France and China all employed force against countries in the third world. At the same time, while economic growth in some developing countries has been rapid, the report of the United Nations Conference on Trade and Development (UNCTAD) entitled "Revitalising Development, Growth and International Trade" has reported "large increases during the early 1980s in the number of countries experiencing negative growth in expenditure.... 18 of the 24 countries in Latin America and the Caribbean suffered declines in 1980-83. Among the 47 countries of Africa other than North Africa, growth during this period was negative for 30." In

the face of general economic failure, the military sector has competed unsuccessfully in many countries for the material and human resources required to overcome the enormous capital cost and technical difficulty of establishing and maintaining large armed forces. Countries such as Argentina, Brazil and India have not established autonomous research and design capabilities in the military industrial area, and their military products remain dependent on imported technology.

Current discussions of changes in the power balance within the international system tend to argue that a multipolar system is likely to be the outcome of northern disarmament (either negotiated force reductions or unilateral cuts forced by economic constraints) combined with the growth of military capabilities in the third world.

Changing Patterns of Military Technology Transfer

The overall imbalance in military capability between North and South remains. In 1987 developed countries were responsible for 83 per cent of military expenditure. Although the total value of global arms transfers has remained roughly constant in the 1980s, the respective shares of the major alliances as against non-aligned countries within the third world has changed. In 1978 the third world accounted for 69 per cent of the global total, falling to 61 per cent by 1988. The fastest growing arms importers are currently among industrialised countries—in particular Japan and members of the North Atlantic Treaty Organisation (NATO) adjoining the Mediterranean, such as Greece, Spain and Turkey. Between 1984 and 1988 the percentage of total arms imports by industrialised countries—accounted for by Greece, Spain and Turkey—rose from under 8 per cent to 27 per cent.

In this environment, countries in the third world not surprisingly reject the idea that they are overarmed. However, across the third world there is an uneven pattern of development and some particular countries have increased their military capabilities both through the volume of their arms procurement and through the nature of the weapons systems now available to their armed forces.

The pattern of arms imports within the third world reflects the different economic fortunes of oil-producing countries and the newly industrialised countries, on the one hand, and those that have been increasingly constrained by the need to service large debts accumulated in the second half of the 1970s and the early 1980s, on the other. The Middle East, South and South-East Asia account for 70 per cent of the third world arms imports in 1988. Within this percentage South and

South-East Asia are becoming increasingly important. For example, whereas 12 per cent of third world arms imports in 1984 were accounted for by South and South-East Asia, this figure rose to 22 per cent by 1988, largely as a result of the increase in arms imports by India.

Financing Arms Exports

Although lucrative for companies and corporations producing weapons, arms exports do not bring high economic benefits to most exporting economies (one exception here is France). Governments consider direct economic returns of marginal importance relative to the contribution arms exports make to foreign policy, though some foreign policy benefits are of economic importance. The major exporters are the principal beneficiaries of a stable international environment, and in particular of stability in Europe and the North Pacific. Arms exports also act as a subsidy from the Government to its defence industry, in itself a useful feature of export policy, as maintaining the defence industrial base is considered a vital interest. The distribution of third world imports also reflects the strategic value placed on the Middle East and Asia by major Powers. Some countries in the Middle East that have significant debts have been insulated from the need to reduce arms procurement by military assistance programmes from major Powers.

The pattern of distribution of United States arms exports is focused on a very small number of recipients— Egypt, Israel, Pakistan, Saudi Arabia, the Republic of Korea and Taiwan account for over 70 per cent of American exports to the third world. From fiscal year 1974 until 1984, Egypt, Israel and the Sudan had part of their loan repayments waived. From 1985 Egypt and Israel have had all loans forgiven, though Egypt still has to make repayments on an enormous debt acquired before 1985. In 1988, the United States Congress authorised partially forgiven loans for Pakistan and Turkey. The impact of these assistance programmes is considerable. Since 1985 the value of non-repayable military assistance (effectively grant money) offered through direct programmes has been over \$3 billion per year. Against this, the total value of United States exports has been in the region of \$8 billion to \$12 billion per year. It is not unreasonable to suggest that since 1985 the United States Government has consistently subsidized arms exports up to 30 per cent of their total value, and on occasion during the late 1980s this has risen to 40 per cent.

In Western Europe too, Governments have a central role in the management of arms exports. Arms deals are not normal commercial

transactions but are offered with direct subsidies, most often in the form of export credit (a loan issued by the Government or by private banks and underwritten by the Government). British companies pay an insurance premium to the Export Credits Guarantee Department within the Trade Ministry, which insures manufacturers against defaults in payments by overseas customers. Subsidies are also likely to include interest rate subsidies and an enhanced ability to refinance loans. Organisations similar to the Export Credits Guarantee Department exist in France and the Federal Republic of Germany, while in the United States the Guarantee Reserve Fund was created by Congress in 1980 as a reserve for making payments to United States financial institutions unable to recover debts or where debtors missed payments. This kind of comprehensive subsidy between suppliers runs counter to the philosophy Governments accept when joining economic organisations like the Organisation for Economic Co-operation and Development (OECD). However, as fast as OECD has sought ways to limit subsidized trade, Governments have found ways to remain within the letter of OECD guidelines while continuing to assist domestic companies.

Some countries, the Republic of Korea and Saudi Arabia for example, pay for arms imports in hard currency and, if they receive loans, they are expected to repay them with interest. However, arms programmes to these countries are accompanied by offset arrangements. Looking at the total value of United States arms sales and the value of offset obligations, the Office of Management and Budget in the Executive Office of the President has estimated that roughly 60 per cent of the monies gained through arms exports over the period 1980-1987 have been returned to the buyer through offsets.

The Soviet Union's arms relationship with India, the Democratic People's Republic of Korea and the Syrian Arab Republic suggests that arms exports do not represent a major source of hard currency for it. India pays for arms in rupees and, as the rupee is not convertible currency, this forces the Soviet Union to buy goods in India. It was assumed that Middle Eastern countries settled accounts with hard currency, but these accounts may in fact never be settled. In the case of Syria, Damascus has built up a debt of roughly \$ 12 billion, of which the Soviet Union has written off \$4 billion and agreed that the remainder be spread over 40 years with payments beginning in 1991. The Democratic Republic of Korea was held in default of foreign debts totalling \$4.1 billion in 1988, half of which is apparently owed to socialist countries.

Chinese arms sales to important customers such as Thailand also take place on a concessional basis, at as little as 10 per cent of their value, with payments waived for 10 years. Moreover, the defence sector in China has to compete for resources with other sectors of an economy where demand is greater than available supplies of inputs such as energy, raw materials, and high-quality finished goods. Production costs must reflect this, though it is widely accepted that the unit price charged by China to a recipient is less than that of other suppliers. Looking at some recently quoted prices, a Type 59 tank has been said to cost \$250,000. A Type 69 tank (a version of a Soviet T-59 with an Israeli-supplied 105-mm gun) is believed to cost \$750,000 against \$1.5 million-\$2 million for a comparable Western model. A Chinese F-7 aircraft (a version of the Soviet MiG-21) was quoted to be around \$3.5 million in 1987 as opposed to a minimum of \$8 million-\$10 million for a Western model. Assuming that these figures are correct, the Chinese Government must subsidize arms exports.

The Industrialised Arms Exporters

The Super-Powers

In the five-year period 1984-1988, the Soviet Union and the United States accounted for 65 per cent of the total global arms trade. The reasons for the super-Power market dominance become clearer when it is noted that a handful of major importers closely aligned with one or the other super-Power dominate the arms trade. Seven countries—Angola, Cuba, India, Iraq, the Libyan Arab Jamahiriya, the Democratic People's Republic of Korea and Syria—account for over 80 per cent of all Soviet exports to the third world. Five countries—Egypt, Israel, Pakistan, Saudi Arabia and the Republic of Korea—account for 65 per cent of United States exports to the third world.

These long-standing arms transfer relationships are unlikely to change in the near future since these countries remain close to the centre of United States and Soviet global interests. As discussed below, competitive arming of friendly developing countries may increase if United States-Soviet policies towards third world areas of tension follow their traditional pattern.

Growing Significance of Europe

The close relationship between the arms trade, security assistance and alliance relationships has placed a ceiling on the growth of Western European arms exports—the five largest Western European arms

exporters accounted for 20 per cent of total exports in 1988, compared with 22 per cent in 1978. Within that 20 per cent share, French sales declined and those of the Federal Republic of Germany increased significantly. Individual European countries cannot match the level of economic assistance or offer the same kind of security relationship as the United States. However, the growing emphasis on European co-operative defence production and the evolution of a more coherent European defence industrial base might bring about an important change in the overall global pattern of arms exports.

Several developments acting in conjunction may have important long-term effects on the size, capacity and structure of the arms industry in Western Europe. In political terms, arms control negotiations and procurement planning will have to be linked if conventional arms control talks in Europe lead to significant reductions in the size of forces in Europe. The mandate provided to negotiators at the Vienna talks on conventional forces in Europe states that the "objectives of the negotiation shall be to strengthen stability and security in Europe through the establishment of a stable and secure balance of conventional armed forces, which include conventional armaments and equipment, *at lower levels.... Each and every participant* undertakes to contribute to the attainment of these objectives" (emphasis added). If achieved, this would require a verified reduction in future procurement and arms production among the largest arms exporters.

A reduction in forces may result from the squeeze on defence budgets among Western European countries created by the pressures of escalating costs of weapons programmes and competing public expenditure needs in an environment of reduced perception of the threat from traditional adversaries. Looking at table 1, one would expect that European defence budgets are likely to fall in real terms over the next few years.

It is not clear whether this budgetary environment is a permanent feature of European defence planning, but it offers some indication of why the emergence of a more integrated Western European defence sector is the intended outcome of the September 1988 Action Plan by the Independent European Programme Group (IEPG) within NATO.

The European defence industry is able to produce more arms than European countries can absorb. Powerful economic interest groups, threatened with the loss of protected domestic markets, and Governments, apprehensive about losing their arms production base, may limit the internationalisation of arms production, and one

TABLE 1
1989 Budget Decisions by Selected European Countries

Belgium	Mid-term budget review will cut \$51 million annually from the Belgian defence budget, though not from the procurement budget
Denmark	Defence spending frozen for the next three years at a level index linked to inflation
FRG	Proposed budget increase for 1990 is below the expected rate of inflation
France	Less than half of the money required to sustain planned programmes has currently been guaranteed by the Government. Some major programmes have been put back into future budget years.
Netherlands	Dutch Finance Minister proposed to cut defence spending for the first year since 1979. In the debate on the budget in September, members of the Dutch Parliament are expected to suggest cuts in procurement
Norway	The rate of growth planned for the Norwegian defence budget will be reduced to 2 per cent, probably requiring cuts in planned equipment programmes for the navy
UK	Reduced spending budgeted for 1989-1990 for the sixth consecutive year, with level funding planned for the next two budget years.

alternative approach for Western European arms producers would be to push for additional arms exports. However, the level of economic support required to compete with the United States could only be sustained through the European Community (EC), perhaps with an intensified role assigned to the European Commission in co-ordinating external trade and security-related affairs. If this were to occur, Europe might emerge as an attractive supplier of traditional clients of one or the other super-Power. Some traditional friends of the Soviet Union—such as India and Libya—not only follow the practice of avoiding alliance dependency in their foreign policy, but also have long historical ties with one or more EC member States. However, this development is certainly not inevitable and may be constrained by article 223 of the Treaty of Rome, which states:

- “a No Member State shall be obliged to supply information the disclosure of which it considers contrary to the essential interests of its security;
- “b Any Member State may take such measures as it considers necessary for the protection of the essential interests of its security which are connected with the production of or trade in arms, munitions and war materiel; such measures shall not adversely affect the conditions of competition in the common market regarding products which are not intended for specifically military purposes.”

Defence-Industrial Capacity of Third World Countries

Within the third world, buyers are now demanding a greater local involvement in producing arms in collaboration with the seller. Early predictions about the speed with which arms industries would grow were overstated, but over the longer term this spread has been a persistent and important trend. Developing countries that used to buy arms now insist that a larger share of their military expenditure contribute to local industrial activity, and two broad categories of arms producers have emerged. On the one hand are countries that use defence production to support a foreign policy of non-alignment—such as India. Here arms production (primarily in the public sector of the economy) is used to underline political independence and avoid dependence in conflict. On the other hand are countries that use arms production, to forge closer ties to Western companies in order to boost the development of local manufacturing. This pattern has emerged in East and South-East Asia.

Countries which were among the largest arms importers in the 1970s—notably Israel, Egypt and Taiwan— now meet a large proportion of their needs from domestic production. Countries in Southern Europe and South-East Asia are also unwilling to buy arms without participating in the production and, where possible, the development of weapons systems.

In the Islamic Republic of Iran and in Iraq, the Gulf war stimulated a major increase in investment in defence production. However, neither of these countries is likely to overcome its dependency on arms imports because of its limited technology base and the large scale of its military requirements.

Armed Conflict and the Arms Trade

As noted in the introduction, the pattern of armed conflict is one key factor influencing the arms trade. There were 30 major armed conflicts in progress at the end of 1988. All these conflicts had an important international dimension, most often expressed through the supply of arms to one or more parties to the conflict.

In 1988 the Stockholm International Peace Research Institute (SIPRI) recorded a reduction in the number of major armed conflicts from the 36 recorded for both 1986 and 1987. Moreover, during 1988 and 1989 there has been some evidence of progress towards the resolution of several protracted conflicts, largely as a result of changes in the international environment, in particular in the super-Power relationship.

Up to September 1989, cease-fires in conflicts between Ethiopia and Somalia, Libya and Chad, Iran and Iraq and in Nicaragua (all declared in 1988) have held. On 15 February 1989 the Soviet Union completed its troop withdrawal from Afghanistan in the context of the four Geneva agreements signed on 14 April 1988. On 22 December 1988, Angola, Cuba and South Africa signed accords which promise the withdrawal of the 50,000 Cuban forces from Angola and Namibia by December 1990, together with the establishment of Namibian independence. In April 1989, Vietnam committed itself to withdraw its forces from Kampuchea by the end of September 1989. Negotiations have also been held during 1988 and 1989 between conflicting parties in Kampuchea, Colombia, Cyprus, Mozambique, the Western Sahara and Ethiopia (with the Eritrean People's Liberation Front), and between Ethiopia and Somalia.

In some of these cases improved political communications between conflicting parties offer a chance of progress towards conflict resolution. However, these optimistic developments require careful qualification. None of these countries has solved the root causes of its conflict and most of them remain at war. Moreover, while the involvement of foreign armed forces in the conflicts has declined, in some cases this has been accompanied by increased levels of arms supplies.

In Afghanistan, the level of Soviet arms supplies to the Kabul Government increased significantly after 1984, reflecting the growing responsibility of Afghan forces for fighting the Mujahideen in order to reduce Soviet casualties and, later, preparations for the withdrawal of Soviet forces. In 1989, in spite of predictions that the Soviet Union would not continue major support to the Afghan Government after the withdrawal of Soviet forces, the level of arms supplies to the Afghan Government has increased further with the supply of long-range surface-to-surface missiles (the SCUD-B) and combat aircraft such as the SU-25 and MiG-27.

Sophisticated systems that attracted a great deal of public attention are no longer being supplied to the Mujahideen. The United States also attempted, unsuccessfully, to secure the return of stockpiles of Stinger portable surface-to-air missiles from the Mujahideen. However, large quantities of less sophisticated rocket artillery, mortars and small arms are still being supplied to the Mujahideen from both China and Western suppliers via Pakistan.

In Angola, the willingness of the Soviet Union and Cuba to replenish stocks of Angolan equipment and, with the assistance of the German

Democratic Republic, offer training and advice has helped shift the local balance against South Africa. This changing military balance has been one of the factors which has led South Africa to negotiate with regional enemies. If Cuban troops take their equipment with them when they withdraw, it may be that the Soviet Union will increase the level of arms transfers to Angola in an effort to prevent the South African forces from reclaiming local military superiority.

In Kampuchea, the Khmer Rouge, deposed by Vietnamese forces in 1978, remains numerically and militarily the most powerful opposition group in the country and continues to receive arms supplies from China and Thailand. To prevent the Khmer Rouge from returning to power, Vietnamese troop withdrawals are being accompanied by increased arms transfers to the Government of Heng Samrin Hun Sen from the Soviet Union via Vietnam. Moreover, the Vietnamese Government has reserved the right to respond to any call for assistance from the Kampuchean Government under the terms of a 1979 treaty. Other opposition groups—the group led by Son Sann and the forces loyal to Prince Sihanouk—are receiving increased assistance from Thailand and Western countries.

In other cases progress in resolving inter-State conflicts has been accompanied by an increase in the intensity of domestic conflict. Improvements in relations between Ethiopia and Somalia (each of which had previously supported opposition forces in the other) was followed by an increase in the intensity of their respective civil wars. In Iran and Iraq sharp increases in the intensity of internal conflicts followed the August 1988 cease-fire agreement.

The cease-fire in the Iran-Iraq war has been followed by increased Iraqi involvement in the war in Lebanon, where the supply of arms to Christian forces has contributed to an escalation in the level of violence during 1989. In July and August 1989 the supply of arms by Iraq to Lebanon threatened to bring about a crisis in Iraqi-Syrian relations, with Syrian and Lebanese Muslim forces threatening to attack ships said to be bringing Frog-7 surface-to-surface missiles from Iraq to Christian Lebanese forces. This apparently led to intervention at the highest political level by the Soviet Union with both Iraq and Syria.

In spite of improvements in super-Power relations and efforts to address regional conflicts in 1988-1989, there is no evidence that the level of arms transfers to areas of conflict has been reduced.

Pattern of Arms Transfers to Conflicts

The determinants of arms imports are the nature of a recipient country's political alignment (in particular its relationship with the super-Powers), the nature and capabilities of the enemy being faced and the environment in which the weapons are expected to operate. All of these features have changed during the 1980s. The relationship between supplier and recipient has been changed in part by the presence of an increasing range of suppliers. As noted above, the United States and the Soviet Union account for over 65 per cent of arms transfers, a reduced share compared with that of the 1970s.

The market share lost by the super-Powers has been taken by new exporters of two broad types: those that have decided to establish defence industries in spite of a relatively small domestic demand for weapons and those that re-export arms that they did not produce themselves.

The first group of countries exports arms essentially in order to make domestic defence industries less of a financial drain on the economy, and would include Brazil, China and Israel. This rationale for arms exports also exists among European suppliers.

The second group exports arms not for financial gain, but in order to support regional foreign policy interests. Iran, Iraq, Israel and Syria support various factions in Lebanon in an effort to frustrate the policies of regional rivals. This motive is also present in South-East Asia, where China and Thailand have supplied arms to Kampuchean resistance groups to weaken Vietnam. China and Israel belong in both categories since more than one motive underlies their arms export policies.

There also exists a black market for arms, particularly small arms, to which recipients can turn if foreign Governments will not meet their needs. The size of this market is impossible to ascertain and therefore a true measure of its significance is also elusive. However, even in cases such as Iran and Lebanon, it is a minor element of the arms imported into those countries and, in an environment where Governments continue to see arms transfers as legitimate instruments of foreign policy, this will continue to be the case.

Iran-Iraq War

The Iran-Iraq war was the dominant feature of the arms trade with the third world between 1980 and 1988. Iran and Iraq between them accounted for roughly 25 per cent of major arms imported by third

world countries in this period, receiving over \$27 billion worth of major weapons. This figure excludes large deliveries of small arms, ammunition and other military supplies, spare parts, technical assistance and training to Iran and Iraq and all deliveries to other Gulf countries.

While sharing the same goal—preventing either Iran or Iraq from emerging as a dominant regional Power—the super-Powers have used different means to that end. In the 1970s arms transfers (including those to Iran) were a central feature of United States policy in the Middle East. In the 1980s the United States found itself excluded from influence in the Iran-Iraq war after the collapse of its relationship with Iran, and so it has deployed more of its own armed forces in the region to protect national interest. The Soviet Union— which shares long land borders with both Iran and Iraq— supplied arms to both sides in quantities considered sufficient to prevent defeat. After the Iraqi invasion of Iran, the Soviet Union and other Warsaw Treaty countries initially provided arms to Iran. After 1981 (and on a much larger scale from 1983 onwards), as Iran gained the upper hand, the Soviet Union became Iraq's largest supplier of arms. In 1988-1989, as Iraq regained the military initiative, the Soviet Union and Eastern European countries have resumed supplies to Iran.

Since the Iranian revolution and the Soviet invasion of Afghanistan, United States policy in the Persian Gulf has emphasised, through demonstrative actions and direct intervention, the local capabilities of United States forces. Support of the military capabilities of regional countries, in particular Saudi Arabia, has remained important, but this policy has been constrained by the more active role of Congress in arms export decision-making. All arms exports worth in excess of \$14 million for "significant military equipment" and \$50 million for other weapons and military services must be approved by Congress. This approval has been refused in a significant number of cases—especially to Arab States and anti-Government guerrilla movements. Since 1986, Bahrain, Jordan, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates have all had one arms agreement or more refused by Congress.

Soviet arms exports in particular have been linked to conflict areas. In addition to Afghanistan and Iraq, Angola (along with Cuban forces in Angola), Syria and to a lesser extent Nicaragua and Vietnam have been important recipients of Soviet arms. Whereas the series of Arab-Israeli conflicts between 1967 and 1982 took place some distance from the Soviet Union, the USSR shares its border with Afghanistan, Iran

and Iraq, and has a more direct interest in the internal development of these countries. With the failure of direct intervention in Afghanistan and the lack of alternative strategies—such as the use of economic assistance—arms exports to these countries are likely to remain an important element of Soviet regional policy.

For Moscow simply to abandon commitments to long-term partners in the third world beyond the Soviet border, such as Angola, Syria or Vietnam, would be for it to relinquish any aspirations to a global foreign policy. Nevertheless, the supply of military assistance to third world Governments unable to command political authority inside their own countries has been expensive. This expenditure may become increasingly difficult to defend under the scrutiny of the Supreme Soviet while shortages of consumer goods in the Soviet Union continue.

New Arms Suppliers

The traditional major Powers remain by far the most important actors in the arms trade, but there are other suppliers whose role is not insignificant. Moreover, the significance of these exporters as suppliers of countries at war is greater than their overall importance within the global arms market.

Table 2 indicates the comparative importance of supplies to countries at war for a selected group. As can be seen, imports by countries at war are particularly important to smaller suppliers.

TABLE 2

Arms Supplies to Countries at War as a Percentage of Total Arms Exports

Brazil	China	Egypt	France	Libya	Syria	USSR
40	43	86	25	46	99	28

For the most part, the future export performance of these newer suppliers is likely to remain linked to imports by countries at war. It is questionable whether any new market can substitute for that provided by the Iran-Iraq war. For countries like China and Brazil, exports to Iran and Iraq represented roughly 40 per cent of total exports during the period 1984-1988. While companies from the United States and Western Europe remain politically constrained from selling to Iran, the position of important supplier to Teheran may be retained by China, Libya and Syria. However, there are signs in 1989 that Eastern European supplies to Iran have increased since the 1988 cease-fire. Brazil and Egypt may benefit from reduced supplies to Iraq by France and the Soviet Union. The French Government has been reluctant to sanction

new orders from Iraq before existing debts are cleared, while the Soviet Union does not want to see Iraq establish itself as the dominant regional Power and, as noted above, the Soviet Government interceded to try and prevent the delivery of Iraqi arms to Lebanon.

Egyptian exports may benefit from the formation of the Arab Co-operation Council in February 1989 by Egypt, Iraq, Jordan and Yemen. Iraq has become the largest customer for Egyptian arms exports.

The newer suppliers depend on a political climate favourable to their arms exports since they cannot match the financial terms, including offsets and economic assistance, or the level of technology offered by the major Powers. In fact, most of the equipment manufactured in countries such as Brazil and Egypt continues to include a high proportion of imported technology.

Influence of Local Factors

The future pattern of arms exports to conflicts will also be heavily influenced by the location of those conflicts.

In Beirut, a large city, both Syria and Israel have learnt that heavy equipment and air power are difficult to use effectively, while relatively unsophisticated small arms and man-portable equipment are effective weapons. Under these conditions the range of suppliers able to meet the requirements of local combatants is greatly expanded. The inventory of small arms and ammunition available in the world is vast. To give some indication, United States companies manufactured roughly 6 million personal weapons per year during the Vietnam war. Assuming that the Soviet Union and China maintained similar outputs for the duration of the war, this would have placed around 18 million small arms of the M-16/AK-47 type in circulation every year. Added to these figures, similar European weapons are also produced in large quantities around the world. The West German Heckler and Koch G3 rifle is licence-produced in 14 countries (and imported by many more), and the Belgian FAL rifle is licence-produced in 11 countries, while others (such as Brazil) have developed local copies.

In addition, a large number of countries manufacture these and other unsophisticated weapons systems, such as heavy machine guns, 20-35 mm calibre guns, rocket artillery and 60-80 mm calibre mortars. Not only is the destructive power of these weapons high, but the sheer volume of equipment already available and the number of suppliers would make effective monitoring and verification of their distribution difficult to achieve.

In some countries the availability of large quantities of major weapons systems has had an important influence on the outcome of conflicts. As noted above, this remains the case in Afghanistan and Angola. During the Iran-Iraq war, Iraq in particular brought to bear enormous quantities of heavy equipment, including the latest generation of fighter aircraft, surface-to-surface missiles and chemical weapons. If this pattern of conflict persisted, the range of suppliers able to meet the needs of combatants would be considerably smaller.

Prospects for Arms Transfer Control

An important unknown factor arising from the Iran-Iraq war is the evaluation that third parties will make of the extensive use of chemical weapons by both Iran and Iraq. If chemical weapons come to be seen as effective weapons or effective deterrents of a potential aggressor, then a qualitatively new dimension may be added to the international arms trade. Moreover, the issue of deterrence in particular may act as a spur to military nuclear programmes.

The use of chemical weapons has been overshadowed to some extent by concern over the spread of ballistic missiles and the technology to produce them. Some countries have certainly initiated programmes designed to give them the option of developing future force structures based on these systems. This in turn has added momentum to efforts by the United States and Western European countries to control their transfer, notably through the 1987 Missile Technology Control Regime (MTCR). Since the MTCR excludes the Soviet Union and China—in the past the primary suppliers of ballistic missiles—and all the third world countries engaged in buying or developing such systems, it probably has little chance of success. Moreover, the means of delivering weapons by air over considerable distances have been available for many years to most of the developing countries currently known to have military missile programmes—such as India, Iran, Iraq and Israel. Ballistic missile programmes would add a new dimension only where they involved missiles with a very long range or carrying new types of warheads. The issue is therefore closely linked to questions of chemical and nuclear arms control.

As yet efforts to place arms transfer control in the context of negotiations concerning regional conflict resolution have completely failed. The clearest example of this has been the disregard of commitments entered into by both super-Powers when signing the 1988 Geneva agreements on Afghanistan. One has to conclude that as

long as Governments see arms transfers as legitimate instruments of foreign policy, the outlook for arms transfer control will continue to be bleak.

Arms transfer control is likely to become an issue of great importance in the process of negotiations on conventional armed forces in Europe (CFE) for two reasons. First, force levels in Europe must take into consideration forces deployed in Europe for use outside the region. The Soviet Union and the United States are global Powers, while France and the United Kingdom have residual responsibilities in places as far removed as Djibouti and Tahiti, Hong Kong and the South Atlantic. Secondly, regional arms control is workable only where geography and politics allow a self-contained area to be defined and isolated from neighbouring regions, but at the southern and eastern boundaries of Europe, countries represented at Vienna live in proximity to Africa and the Middle East, where the risk of war is greater than in Europe. Soviet Foreign Minister Shevardnadze raised this issue specifically in Vienna on 6 March 1989, when he said:

“In the Middle East and Southwest Asia, that is, in close proximity to Europe, powerful weapons arsenals are being created. It is not enough just to mention that 25,000 tanks and 4,500 aircraft are deployed and ready for combat in the Middle East, and there is a real danger of nuclear and chemical weapons appearing there: Missiles have already appeared with an operational range of 2,500 kilometres.... The conclusion is obvious: The processes of disarmament in Europe and settlement in the Middle East have to be synchronised.”

It is difficult to avoid the conclusion that a failure to draw in both non-European countries and the issue of conventional military technology transfer will put in jeopardy the overall process of conventional arms control.

INTERNATIONAL ARMS TRANSFERS: SUPPLIER POLICIES AND RECIPIENT DEPENDENCE

Arms transfers play an important role in global politico-military systems. Because of their consequences or because of their utility as instruments of foreign and security policy, arms transfers are inevitably a highly political issue for suppliers and recipients. This paper presents the background of supplier policies and identifies the determinants of recipient dependence, one of the major consequences of arms transfers for arms-importing countries.

Supplier Policies

Owing to limitations of space and to uneven availability of relevant information, this section will not describe the policies of individual arms suppliers, but rather focus on general considerations about the purposes and objectives of supplier policies. Probably all significant supplier States have a policy on arms transfers or at least a regularity in the procedures and practices of arms transfers that can be interpreted as an expression of an implicit policy. Some countries provide detailed and comprehensive information about their procedures and to some extent, if the Government has to justify specific transfers before parliamentary bodies, even about the underlying political objectives. In other countries, openness and transparency leave much to be desired.

“Defensive” Component of Arms-Export Policies

A first component of supplier policies defines the procedures and administrative and legal preconditions that have to be pursued and fulfilled for a transfer to be permitted. This is a defensive component. It does not indicate when and under what circumstances arms transfers should be made, but rather, in a negative way, when arms transfers should not be made. The main reasons for this kind of governmental control over arms exports are probably the following:

- For national security reasons the State may want to prevent arms from being delivered to a potentially hostile country or technological secrets from being compromised;
- The State may for general reasons of foreign policy want to ensure that arms transfers from its territory do not violate international agreements (e.g., arms embargoes or obligations under the ballistic Missile Technology Control Regime);
- The State may want to support arms control objectives by its arms export policy, i.e., exert general restraint in arms transfers or prevent transfers that could disturb stability and peace (e.g., transfers to belligerent parties or zones of tension);
- Arms transfers are inevitably regarded by other States, including recipients, as an expression of the supplier State's foreign policy. Hence transfers need to be co-ordinated with the foreign policy in order to ensure that they do not contradict it.

Economic-Industrial Component of Arms Export Policies

The arms export policy of some States may have a second component, which could be termed "economic-industrial", because it concerns the economic benefits of arms exports and their contribution to the viability of domestic arms production. The latter is regarded as an important contribution to national security, essentially because it allows the State to evade or at least reduce its recipient dependence.

Among the economic benefits which the Government may try to further by its arms export policy, it is necessary to differentiate several distinct types, even though they may all be relevant to the supplier State's Government:

1. Benefits to the national economy—for which the Government is responsible—without a direct and immediate impact on the State budget, e.g., a more favourable balance of payments and lower unemployment. (The latter can have a delayed impact on income tax revenues.)
2. Direct benefits to the State budget, e.g., reduced military procurement expenditures made possible by reduced unit costs due to the impact of arms transfers (economies of scale and spreading of non-recurring expenditures, such as those for research and development).
3. Commercial-industrial benefits to private companies or State-owned plants producing arms. In addition to increasing turnover

and profit, arms exports may also help to avoid interruptions in design and production work. The Government may have an interest in these benefits, but their immediate effect is not on the State level. Like other exports, arms sales contribute to a favourable balance of payments. The economic benefits of a given transfer depend directly on its financial terms. Grant transfers (which have become an insignificant part of all arms transfers) yield no immediate economic benefits to the suppliers. They rather cause costs, which may, however, not be substantial when surplus and obsolete arms are transferred. Transfers on preferential financial terms have evidently smaller economic benefits than cash or market-rate credit sales. For some countries it is not only the contribution to the balance of payments as such that makes arms sales appear economically attractive, but also the associated inflow of foreign exchange. As another reason, arms transfers may be expected to lead to increased civilian trade among the same countries. The recipient Government may place additional orders for civilian goods if a co-operative relationship has been established or reinforced by arms transfers. On the other hand, arms transfers can displace exports of commercial goods if they compete for the same finite financial resources of the recipient countries. It has been argued that barter agreements or highly specified offset arrangements in arms transfers may provide to the arms supplier additional security in the supply of resources, in particular raw materials needed by the industry and not available in sufficient quantity from domestic sources. At the same time, arms-importing countries may raise the prices of their export commodities to pay for increased arms imports. In general, the contribution of arms transfers to export earnings and to the balance of payments amounts to no more than a few percentage points for most of the significant arms-exporting countries. They are not insignificant, but neither are they crucial, with very few exceptions.

Arms exports contribute to employment in the producer country. Since arms for export and those for the producer State's own armed forces are produced on the same production lines and the same workforce may be engaged in both military and civilian production, it is difficult to quantify precisely the impact of arms exports. It has been estimated that in the late 1970s and early 1980s, in statistical terms, arms exports accounted for 400,000-700,000 jobs for each of the major

Western European arms-exporting countries. (The figures vary not only because of incomplete information, but also because they include or exclude indirect employment effects, i.e., those outside the arms industries.) It could be argued that mere numbers do not adequately reflect the contribution of arms exports to full employment because the beneficial effect is concentrated in technologically advanced industrial sectors, such as aerospace. Even if this benefit should be of lesser significance on a national level, it may carry much weight in regions where arms industries are concentrated. However, restraint, or even significant reductions in arms exports, would not have a crippling effect on employment on a macro-economic level.

Especially for the medium and small arms exporters, the positive consequences for the balance of payments and employment benefits are less important than the contribution of arms exports to sustaining the defence production base. In these countries, the quantitative requirements of the national armed forces do not suffice to maintain research, development and production across the whole range of advanced weapons systems. Arms production cannot be reduced to just any level without incurring significant economic penalties; a certain quantitative level (which differs from project to project) is necessary to keep unit costs competitive. The Government may, for political and security reasons (getting full control over supply, i.e., avoiding dependence on foreign arms suppliers), be willing to pay a premium for domestically produced arms, but only up to a point. The extension of production runs by exports allows for reductions in unit costs in several ways:

- 1. Learning effects:** The basic idea of learning effects is that the more frequently labour and management perform a specific task, the more efficient they will become at that task. Thus an extension of the production run will result in decreasing marginal costs. In order to realise maximum learning effects, orders should be spread as evenly as possible over time (otherwise the workforce has to be expanded).
- 2. Economies of scale:** Large-scale production may enable a producer to use more efficient equipment and processes, e.g., to increase the division of labour. Economies of scale are less a function of the total length of a production run than of the rate of production. A mere extension of the production due, for example, to late export orders, would not allow for additional economies of scale.

3. **Spreading fixed costs:** Research, development and other non-recurring expenditures are spread over the units produced. Thus, the more units being produced, the smaller this cost component becomes for each unit. This effect is particularly important in the production of advanced weapons systems requiring high research and development expenditures.

Below a certain quantitative level of demand, production may have to be interrupted (to be resumed when new orders come in), causing severe dislocations for the affected companies or plants if the workforce cannot be flexibly shifted to other military or civilian production. Thus arms exports can serve to smooth production rates and to keep production lines open and companies in business.

The economic-industrial component of arms-export policies not only ensures that arms exports serve these interests, but also that the pursuit of economic-industrial objectives does not result in unacceptable dependence on some important recipients, or on the continuation of arms exports in general (supplier dependence). Many producers of major weapons systems are dependent, though to widely varying degrees, on exports for supporting the domestic arms industry, for export earnings, or for foreign exchange. Large arms-export orders can alleviate economic-industrial problems, at least in the short term. However, if they result in an expansion of production capacities, they can indeed result in increased dependence in the future.

Arms Exports as an Active Component of Foreign and Security Policies

For a very limited number of main supplier States, arms exports are an integral part of foreign policy. For them the economic benefits of arms exports are certainly relevant, but probably of secondary importance if compared to the larger political objectives pursued by arms transfers. Smaller supplier States usually do not have as wide zones of interest or responsibility, but in some instances arms exports may nevertheless be employed to support actively specific foreign policy objectives.

If arms exports are used as an active part of foreign and security policy, they can serve to enhance the military capabilities of friendly States and to strengthen their ability to pursue political, military and security objectives shared with or supported by the supplier. The supplier may also pursue the more general objectives of strengthening regional stability and contributing to the preservation of peace by increasing the recipient's military capabilities. If these objectives are to be achieved,

a careful and unbiased evaluation is required not only of the regional distribution of military capabilities and of the political intentions or threats, but also of the potential reaction of other countries in the recipient's region to the transfer. Due to the subjectivity of each Government's evaluation of the security situation in any given region, even arms transfers intended to be stabilising can increase political tensions, intensify regional conflicts or even provoke an arms race to the detriment of stability and peace.

In case of armed conflict, the supply of arms can be regarded as a politically less costly alternative to direct military involvement. But transfers of conventional arms to belligerent parties can definitely carry military risks beyond the merely political costs such supplies can imply. The supplier country's armed forces may be utilised to effect the transfer (transportation by sea or by air, possibly also assistance in assembling the arms, and in technical support), incurring the risk that they may be attacked and that the supplier country may be drawn into the military conflict. Another aspect of arms transfers carries potentially the same risk of escalation and of direct military involvement. The large-scale supply of arms by a major military Power is often, if not always, regarded as a clear message of support: a commitment. The limits of this implied support and commitment are, however, usually not clearly spelt out, not even to the supplier. The supplier may, if an important recipient becomes involved in war, be unable to draw a clear line and thus it may incrementally increase its involvement. As a consequence of supplying arms, major suppliers can, without careful consideration of all implications and without deliberate decision, indeed almost against their will, become actively involved in a recipient's war.

An important part of suppliers's reasons for arms transfers refers less to third parties (the recipient's potential military adversaries) and general objectives (strengthening of stability and peace) than to the bilateral political relationship with the recipient State. Because of the symbolic importance attached to them, arms transfers can be used to indicate the political commitment to a State or Government or to reinforce friendly relations, even when the purely military significance of the transfer may be small. Arms transfers are also instruments of influence and leverage. They provide for a wide range of contacts, building up a relationship where major suppliers may, without openly exerting pressure, influence recipient Governments in their general foreign and security policies or on specific issues. By virtue of its capability to manipulate the supply of arms, the supplier may also be able to force

the recipient Government to comply with its interests, i.e., it may be able to exert leverage when influence alone has not proven successful and important interests are at stake. The exertion of leverage is likely to impact negatively on the relationship, regardless of its success or failure; it erodes the basis for future influence and leverage if it causes the recipient to reduce its vulnerability *vis-a-vis* the supplier, for instance, by diversifying and seeking alternative sources of arms supplies.

Recipient Dependence

Since it is directly linked to the politico-military goals of national security and autonomy, recipient dependence touches basic political concerns. Continuous dependence on an external supplier is a most serious national security concern because arms transfers are linked to the recipient's military capabilities. Sometimes the relevance of recipient dependence is questioned. Examples like Egypt's change of major supplier and the performance in war of the Islamic Republic of Iran after it was cut off from its former major arms supplier are used to make the point that States can change suppliers or do without their support. But such examples do not vitiate the concept of arms-transfer dependence or its relevance, as long as they fail to indicate the full amount of politico-military costs that breaking the relationship entailed for the dependent party (decreasing its military readiness and power, and economic waste of imported arms that become inoperational due to lack of spare parts, ammunition, or maintenance capability). Even the most dependent actor can terminate a relationship if he is willing to pay the price.

If one looks at an arms transfer as a chronological sequence, it becomes clear that the nature and the extent of recipient dependence is not the same at different stages. When a potential recipient has evaluated military needs and the marketplace, and has entered negotiations with an arms producer (company and Government), the supplier Government (in some cases, the parliament) may yet decide not to supply the requested arms after all, or at least not for the time being, and break off the negotiations. In this case, the would-be recipient Government either has to look for an alternative supplier or do without the desired arms. If it can switch suppliers without any problems, the recipient is not dependent upon any specific supplier at this pre-agreement stage. But some factors like political alignment, military doctrine, or lack of funds may limit the ability to shift to another supplier.

When arms transfer negotiations are successful, the supplier may still go back on the agreement before actual delivery. Such a step could have politico-military and economic costs. Among the first type of costs one may include procurement delays and the negative impact of a supplier's refusal perceived as a political act of disapproval. If the recipient has already started construction of infrastructure that cannot be utilised without modification for substitute weapons systems, economic costs would result from a supplier's refusal to honour an existing agreement.

When the arms are delivered, the recipient still remains dependent on the supplier. Now the damage the supplier can inflict on the recipient refers to a degradation of the arms' readiness and effectiveness if support activities are delayed or terminated. Recipient States rely, though to different degrees, on the suppliers for training, assistance in maintenance and spare parts. Usually the need for training is of short duration. It starts after an agreement on arms transfers has been reached and will run out some time after delivery, when indigenous instructors are able to take over the task from personnel from the supplier country's armed forces and the producer company. Major weapons systems also require continuous technical support. For developing recipient countries with substantial imports of advanced and complex weapons systems, this means that foreign technical personnel will be present not only for a short introduction and training period, but for an extended time, perhaps even for the whole life cycle of a weapons system. Even if basic maintenance tasks can be carried out without foreign assistance, an uninterrupted supply of spare parts is necessary if extended downtimes are to be avoided, and many recipients have to send their imported weapons systems back to the producer for overhaul. The need for training and for technical support is also referred to as a problem of "absorption". This dimension of recipient dependence is often emphasised.

If imported weapons are used in conflict, recipient dependence is accentuated. Not only may problems with the supply of spare parts and ammunition limit a recipient's ability to fight, but the resupply of weapons systems is likely to become necessary after a few days or weeks, depending on the intensity of combat. Arms suppliers thus have the means to influence the outcome of armed conflict. The duration of the armed conflict, coupled with the intensity (attrition rate), is an important determinant of the dependence experienced by arms recipients engaged in war.

Determinants of Recipient Dependence

The following brief description of the main factors which determine the extent to which a recipient country is dependent on its arms suppliers also implicitly provides some guidance for strategies designed to limit or reduce such dependence. Not all of them are to the same degree compatible with broader international objectives. For instance, confidence-building measures and the relaxation of tensions could reduce threat perceptions (and hence also dependence) and at the same time contribute to international peace. On the other hand, the expansion of domestic arms production might not contribute to international peace and stability, even though it might reduce the recipient's dependence.

Factor 1: Threat Perception. The extent to which a State faces a military threat—that could make necessary the use of military means, requiring either new arms imports or a high level of readiness of arms already deployed—is of paramount importance in determining its dependence on its arms suppliers. Only the perception of certain threats is relevant for recipient dependence, namely, threats that, in the view of the Government perceiving them, can be countered by keeping already deployed arms in a state of readiness or by the acquisition of additional arms. Of these perceived threats, the following variables are relevant for recipient dependence: their likelihood, imminence and magnitude.

The reason why the perception of a threat to national security has a bearing upon a recipient's dependence on foreign suppliers of arms is evident. In terms of dependence theory, an increase in threat perception increases the costs of a disruption of the arms supply. For a Government perceiving armed conflict as a remote possibility or feeling that it has the necessary means to counter a possible attack, a rupture in the relationship with one or several of its arms suppliers would not immediately endanger national security. For a Government that perceives both a strong likelihood of imminent attack and an insufficiency of its own present military means, the costs are higher.

For arms transfer dependence, external threats to national security are probably more important than internal ones, because it is in armed conflict with outside forces that major weapons systems are usually employed. Internal conflicts are largely fought with weapons manufactured locally or produced by many suppliers, so that little dependence results.

Factor 2: Degree of Self-Sufficiency in Arms Procurement. The most evident determinant of recipient dependence is the extent to which a

recipient has to rely on foreign supplies for its arms procurement. Indeed, this determinant is so important that the extent of dependence is sometimes considered to be the equivalent of the extent of self-sufficiency. However, important as it is, the degree of self-sufficiency is only one major determinant of dependence. Since recipient dependence is considered to be the result of multiplying all determinants, full self-sufficiency would still amount to full independence, but for all States lacking full self-sufficiency, the other determinants would have an impact as well.

Factor 3: Ability to Initiate or Expand Domestic Arms Production. Arms recipients capable of initiating or expanding domestic arms production are less dependent on their suppliers than recipients lacking this capability. When weapons are sought, at the pre-agreement stage, a credible option to take up indigenous production of the desired type of weapon or weapons system could strengthen the recipient's negotiating position. Regarding post-delivery recipient dependence, relating to weapons systems deployed with the armed forces, the ability to supplement or replace outside suppliers of spare parts with domestic manufacturers also reduces recipient vulnerability.

The potential for initiating expanding indigenous arms production must not be confused with the achieved degree of self-sufficiency. The latter refers to implemented programmes, while the former refers to the potential for initiating production of types of arms (or components) hitherto imported, that is, to shift to (increased) domestic procurement, which would later result in a higher degree of self-sufficiency. Even when no significant degree of self-sufficiency has actually been achieved, a credible option to shift to increased domestic production is likely to reduce recipient dependence. But switching to increased domestic production is not a short-term solution to recipient dependence. It will take time until weapons systems are developed and produced domestically, become operational, and can replace ageing imported systems. Thus for Governments experiencing at the same time strong dependence on their arms suppliers and a serious threat to national security, turning to indigenous arms production is not a promising short-term strategy. The results might materialise too late.

Factor 4: Diversification of Arms Supply. If two countries have the same level of self-sufficiency in arms procurement and a similar potential for expanding domestic arms production and if their Governments perceive about the same threat to national security, their dependence on their arms suppliers may still differ. An additional factor must be

taken into account, namely, whether their arms imports are diversified among a number of suppliers or concentrated on a few, or perhaps just one. Being a monopoly supplier provides more power than being just one supplier among others. Diversification is a common strategy for avoiding high levels of dependence, not only in arms procurement but also in normal trade.

A recipient's number of suppliers is no sufficient yardstick for diversification. How the supply is spread among the suppliers is as important. Evading supplier dominance (the same as reducing recipient vulnerability or dependence) is easier if a recipient's arms supplies are distributed as evenly as possible among a number of suppliers.

Diversification in the supply of arms from abroad is particularly important for avoiding excessive post-delivery dependence. Once imported weapons systems are deployed, recipients have in most cases to rely on the original supplier for technical support: for maintenance, for overhaul, and for the supply of spare parts. In such a situation suppliers have the capacity seriously to damage the readiness of the recipient's imported weapons systems. Obviously, the vulnerability of the recipient is smaller if every supplier accounts for only a fraction of its arms imports; the risks are then more evenly spread.

Factor 5: Availability of Alternative Sources of Supply. Everything else being equal, it makes a difference to recipient dependence—particularly in negotiations on arms transfers but also in disputes about technical support for arms already delivered—whether the recipient can choose between a number of suppliers. The availability of alternative sources of supply for weapons systems and for technical support alleviates recipient dependence. If a sole or predominant supplier feels that a competitor could step in, it will be more cautious in exerting pressure. A change of suppliers can take different forms. Switching suppliers completely and moving slowly towards increased diversification mark the two extremes. If the ability to expand domestic arms production is the potential for future self-sufficiency, the availability of alternative sources of supply can be seen as the potential for future diversification. The feasibility of switching to alternative suppliers is largely determined by five factors: (a) the number of alternative producers of a given type of arms, (b) the recipient country's financial resources, (c) the recipient country's ideological flexibility, (d) the recipient country's degree of diplomatic isolation, and (e) the ability of the recipient country's forces to convert to new weapons systems.

Factor 6: Reliance on foreign suppliers of spare parts. Controlling the supply of spare parts is mentioned by many observers of arms transfers as a primary instrument by which suppliers keep their customers dependent. Major weapons systems require a continuous supply of spare parts because subsystems tend to break down frequently. Stockpiling large numbers of spare parts will diminish short-term dependence. It is, however, a costly option, particularly if weapons systems from several suppliers, and with none or few common parts, have been procured (as diversification demands). The full effect of such a strategy is realised only if foreign involvement in logistics is kept low. Indigenous production of spare parts is a more effective long-term strategy to limit this factor of dependence. Knowing the potential impact of shortages in spare parts on military preparedness, countries with incipient arms industries tend to focus early on the production of spare parts for imported arms.

The capability to maintain and overhaul the purchased weapons systems is probably the highest recipient priority, but indigenous production of spare parts used in large numbers comes immediately afterward. If their supply relationship is cut, recipients that relied before on foreign supplies of spare parts may also try reverse engineering of spare parts if they have the necessary industries. Complaints regarding the supply of spare parts, in particular delays and high prices, are quite frequent. Accusations that the supply of technical assistance and spare parts is deliberately used to create recipient dependence are directed against both Western and Eastern suppliers.

Factor 7: Degree of Training and Maintenance of Self-Sufficiency. The extent to which arms recipients rely on supplier countries and/or companies for services needed to achieve and maintain an operational capability with imported arms—training during a relatively short period, and technical support services over extended periods, even permanently—has a strong impact on post-delivery recipient dependence.

Training programmes, a kind of “human technology transfer”, may be almost as important for the recipient’s military capabilities as the transfers of actual hardware. What impact a given arms transfer has on the recipient’s military capabilities depends to a large extent on the abilities of the pilots, drivers, and other operators of weapons systems. As long as there is no sufficient pool of indigenous instructors, the recipient has no choice but to depend on the supplier for training.

During the stage when knowledge relating to operation and maintenance is transferred, a disruption could cause, albeit temporarily, much damage to the recipient. Fortunately, from a recipient's point of view, training courses in the supplier State or foreign instructors are needed for a relatively short time only, compared to the long-term reliance on foreign-supplier spare parts and technical services that many recipients cannot evade.

The nominal strength of armed forces (measured, e.g., by their inventories of arms) is no reliable indicator of their operational strength. There is a major difference between merely being able to operate weapons systems and being able to maintain them fully. If deployed weapons are to be operational, they must be maintained, repaired, and overhauled at predetermined intervals and when malfunctions appear. Even if the supply of spare parts runs smoothly, the technical support activities can pose difficulties to recipients. Armed forces with complex weapons systems need large numbers of skilled technicians to keep the weapons operational. Shortages of skilled manpower, lack of know-how, or the fact that the number of deployed weapons is too small to justify the establishment of maintenance facilities could force recipients to rely on foreign sources of support, in particular the original supplier of the weapons systems.

In spite of foreseeable problems recipients sometimes prefer systems beyond their absorption capabilities (at least in the view of outside experts) to simpler and more easily maintainable systems designed specifically for export, even if the latter might be as effective and more affordable. Lack of professional competence on the recipient side is likely to lead to strong recipient dependence, with the supplier recommending the force structure and means of support and taking an active role in support activities (infrastructure planning and management, maintenance, overhaul, repair).

Empirical research has to date not been able to provide substantial evidence that dependence linked to arms transfers would frequently and successfully be used to change the suppliers' internal or foreign policies. This may, however, reflect the absence of dependence less than the fact that it may work by anticipation. The weaker (the more dependent) party will, if it recognises its position, in most cases prevent controversies from coming to a head and tacitly make the concessions (except in cases where its primary interests are at stake) long before a potential political controversy becomes a public issue.

UNITED NATIONS AND INTERNATIONAL ARMS TRANSFERS

Introduction

It has always been a principle of the United Nations that arms limitation and disarmament should apply not only to nuclear weapons and other weapons of mass destruction, but also to conventional weapons.

In spite of this agreement in principle, up to the mid-1980s, action by the United Nations in the field of conventional disarmament and, in particular, on international arms transfers, was influenced by a strong emphasis on nuclear disarmament on the part of a large section of the United Nations membership, and only a limited number of Member States could be counted upon to support consistently such action. Thus, consideration by the United Nations on how to limit international arms transfers took place alongside a qualitative and quantitative advance in the development, production and transfer of conventional weapons. Debates on the question were usually initiated by Western industrialised countries.

Through the years, such important arms suppliers as the United States, the United Kingdom, the Federal Republic of Germany, France, Italy and Canada (and later also the Soviet Union) showed increasing interest in the restraining of arms transfers.

During the 1960s and 1970s, within the multilateral negotiating bodies within the United Nations framework, debates were held and working papers submitted from time to time on the question of the buildup and transfer of conventional armaments, but no concrete negotiations developed, nor was there any apparent consensus regarding specific measures of restraint. A consensus slowly emerged, however, in the 1980s, through the long process described in the following pages.

Indeed, since the mid-1980s, the need to address nuclear and conventional disarmament concurrently has found wide recognition in international politics. The close relationship between nuclear and conventional armaments was noted by General Secretary Gorbachev and President Reagan at their Geneva summit meeting in 1985. Acknowledging that a nuclear war could not be won and must never be fought, they also underlined the importance of preventing any war between them, whether nuclear or conventional. With the conclusion of the Treaty between the Soviet Union and the United States on the Elimination of Their Intermediate-Range and Shorter-Range Missiles (INF Treaty) and the prospect of further reductions in their nuclear

arsenals, hopes for cuts in conventional arms, particularly in Europe, have increased.

The problem is not limited, however, to one region. The frequency of the use of conventional weapons and their destructive effects, especially in developing regions, the economic burden their acquisition imposes, their increasing lethality, the development of dual-purpose weapons, and the growth in arms transfers are factors that have contributed to a willingness on the part of States from all geographical and political groupings to address the question of controlling the conventional arms race.

Early United Nations Initiatives

Between 1965 and 1975, the General Assembly tried more than once to take concrete action on the question of international arms transfers, but in every case there was strong opposition to the regulation of this matter on a multilateral basis.

At the thirty-first session of the General Assembly, in 1976, Japan revived the idea of involving the United Nations in the question of international arms transfers. It did so by submitting a draft resolution which was widely co-sponsored. By the draft, the General Assembly would (a) invite the Member States to communicate to the Secretary-General their views on the question, and (b) request the Secretary-General to prepare, with the assistance of qualified governmental experts, a factual study of the same subject. In spite of the willingness of Japan to amend the draft so as to make it more acceptable to the non-aligned countries, it elicited mixed reactions. For instance, Argentina stated that the concern about trade in conventional arms should focus on the few nations which had a well-developed military industry, with a view to halting the production and dissemination of conventional weapons, rather than be used to tell developing countries what level of military equipment was necessary to meet their defence needs. India, similarly, argued that the proposal would restrict the freedom of small Powers, while leaving the major Powers free to increase their arsenals. In the absence of other disarmament measures, including nuclear disarmament, the draft resolution was, in its opinion, discriminatory against the smaller and less developed countries. At the initiative of India, the debate on the question was then adjourned. On another front, the General Assembly was able to initiate action in the 1960s with regard to the situation in South Africa. It led to the establishment of an arms embargo by the Security Council against South Africa in 1977.

A United States Initiative

During the years 1975 to 1977, the question of international arms transfers was also raised in the multilateral negotiating body, the Conference of the Committee on Disarmament (CCD). This was done mainly in the context of regional approaches to arms control.

In the CCD, in 1975, the United States advocated the regional approach to conventional arms restraint. It cited the Vienna talks on mutual force reductions in Central Europe and the 1974 Latin American Declaration of Ayacucho as examples, and urged the consideration of broader and more world-wide approaches that could complement regional efforts. In that connection, it suggested that the CCD consider principles of conduct that could be applicable on a worldwide basis to the acquisition or transfer of conventional arms.

Again in the CCD in 1976, the United States stressed its view that constructive constraints on the arms trade would enhance the security of all countries and might permit States to shift resources from military to development uses. It also pointed out that it was undertaking some unilateral measures of self-restraint, including restrictions on the transfer of missiles and high-performance aircraft to most regions. Nigeria also referred to the subject. It stated that suppliers were primarily responsible for the arms trade and cautioned against any attempt to divert emphasis in the CCD from priority concerns, notably nuclear disarmament.

During 1977, the international debate on the problem continued to widen. On 19 May, the United States adopted a Presidential Directive on Arms Transfer Policy. The aim of the document was to impose unilateral restraints on United States arms sales under certain specified conditions, to promote co-operation between supplier and recipient nations, and to encourage regional co-operation among the latter towards curtailing the arms trade. The final paragraph of the Document read as follows:

“I [President Carter] am initiating this policy of restraint in the full understanding that actual reductions in the worldwide traffic in arms will require multilateral cooperation. Because we dominate the world market to such a degree, I believe that the United States can, and should, take the first step. However, in the immediate future, the United States will meet with other arms suppliers, including the Soviet Union, to begin discussions of possible measures for multilateral action. In addition, we will do whatever we can to encourage regional agreements among purchasers to limit arms imports.”

During the late 1970s, the United States and the Soviet Union maintained a joint working group on international arms transfers, but no concrete agreement was reached by the two major conventional arms suppliers.

First Special Session of the General Assembly Devoted to Disarmament (1978)

At the tenth special session of the General Assembly, the question of conventional arms limitation was accorded its widest and most extensive consideration to date within the United Nations framework. A large number of States, developing and developed, Eastern and Western, made clear that the escalating arms race, both nuclear and conventional, had to be restrained. But while several, mainly Western, States called for parallel and simultaneous consideration of nuclear and conventional disarmament, another group, mostly non-aligned States, emphasised their position that equal treatment of nuclear and conventional matters would detract from the urgency that should be devoted to the consideration of nuclear disarmament.

A number of concrete suggestions aimed at curbing the international transfer of arms were also advanced at the special session including (a) the prevention of all forms of illegal trade in arms; (b) an international register of arms sales and transfers; (c) an expert study as a first step towards checking the conventional arms race and the growth of international arms transfers.

Ultimately, in the unanimous Final Document adopted at the conclusion of the special session it was agreed (paragraph 25) that “priorities in disarmament negotiations shall be: nuclear weapons; other weapons of mass destruction, including chemical weapons; conventional weapons, including any which may be deemed to be excessively injurious or to have indiscriminate effects; and reduction of armed forces.” Then, in paragraph 46, it was made clear that “nothing should preclude States from conducting negotiations on all priority items concurrently”.

The question of international arms transfers is dealt with in paragraphs 22, 84 and 85 of the Final Document. They provide (a) that, together with negotiations on nuclear disarmament measures, negotiations should be carried out on the balanced reduction of armed forces and 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; and (b) that negotiations on the limitation of international transfer of conventional weapons,

based 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, should also be held.

At subsequent regular sessions of the General Assembly, the approach to regulation and reduction of arms transfers that received the widest attention was the regional approach. In general, the concept was supported by countries of all geographical, political and socio-economic backgrounds. Regional measures were seen not as ultimate disarmament goals, but as supplements to other approaches, including bilateral and global initiatives, towards disarmament. It was frequently stressed, in these debates, that conventional arms restraint was vital for both economic and security reasons, especially for developing and other small and medium-sized countries, in that the conventional arms race accounted for the largest portion of military expenditures, and conventional weapons were not only used frequently in conflicts but also, in view of their increasing qualitative improvements, contributed to a dangerous narrowing of the distinction between nuclear and conventional weapons.

The United Nations Study on Conventional Disarmament

In 1980 and 1981, at the initiative of Denmark, the basis was established for an expert study, to be prepared under the Secretary-General of the United Nations, on all aspects of the conventional arms race and on disarmament relating to conventional weapons and armed forces.

The United Nations expert report, *Study on Conventional Disarmament*, was carried out in 1982-1984, pursuant to General Assembly resolution 36/97 A of 9 December 1981. One of the aspects dealt with in the study was, of course, that of international arms transfers.

On the question, the study stated, *inter alia*, the following:

“168. Possible agreements to restrain the transfer of arms, in the first place between major suppliers and recipients, would have to give particular attention to those weapon systems the characteristics and quantities of which are perceived as threatening to the security of other countries.... It would be necessary to ensure that supplier countries which may not join in such arrangements would not simply expand their transfers to fill any ‘vacuum’ arising from agreed restraints in arms transfers. That objective would be best served by participation of both suppliers and recipients in agreements on arms transfer restraints.

“Separately, recipient countries could negotiate local agreements on arms-import restrictions. Appropriately fashioned, such agreements could enhance, *inter alia*, by reducing the involvement by extra-regional States, the security situation in the respective regions. Such actions are applicable in varying degrees to almost all areas of the world but would be particularly appropriate in areas of tension or regions in which there is already a high concentration of weapons. In addition, agreements between recipients could be strengthened by corresponding agreements with or between suppliers.”

In their conclusions, the experts suggested that “although a possible USSR-United States arrangement on arms transfers could be an important component of any process of conventional arms limitation and disarmament, any such arrangement would need to be accompanied by wider supply/recipient negotiations, perhaps on a regional basis.” With regard to a commitment by the public in all countries for progress in conventional arms limitations, it was the view of the experts that the main role of the United Nations in building such a public commitment was to provide accurate information and to promote a sound understanding of the issues involved as a basis for effective political action.

Third Special Session of the General Assembly Devoted to Disarmament (1988)

At the session, a number of Member States, notably Albania, Argentina, Australia, Belgium, Colombia, Ghana, Indonesia, Italy, Luxembourg, the Philippines, Spain, the USSR and the United States, devoted attention to the question of arms transfers. In particular, the United States noted that in the five years from 1977 to 1981, some \$128 billion worth of arms had been delivered to developing countries. In the following five years, ending in 1986, the figure had risen to \$180 billion—an increase of some 40 per cent. During the same period the developing countries themselves had shown a big increase as the sources of their own weapons. In percentage terms, their share had almost doubled from the first period to the second, rising from 6 to 11 per cent.

The Soviet Union stated that it favoured restrictions on the sale and supply of conventional arms. One of the obstacles to a settlement of regional conflicts, it pointed out, was the intensive importation of weapons into zones of increased confrontation.

The Secretary-General of the United Nations forcefully addressed the question of arms transfers with these words:

“The time has also come for us to recognise the need to deal squarely with the mounting toll of death, destruction and human suffering inflicted by the use of conventional weapons in conflicts around the world. We are witnessing not only the spread of highly sophisticated weaponry but also the growing use of such weapons in conflict areas. The term ‘conventional’ should not hide or render banal the vast destructive powers of some of those weapons, nor should the innocuous-sounding phrase ‘arms transfers’ make us forget the devastating effect of the supply of weapons in local conflicts. To my mind, the fact that the arms component is a growing factor in the export figures of many countries, including developing countries, is a very sad commentary on the present state of affairs. With modern technology not only nuclear war but, increasingly, conventional war as well, has acquired a dimension of destructiveness that it did not have in any earlier age. It is therefore necessary to restrict the spread of the most dangerous types of conventional weapons and, ultimately, to eliminate them altogether.”

One of the imperatives flowing from this, the Secretary-General stressed, was that “there must be a greater awareness on the part of the international community of the incalculable dangers of the conventional arms race and of arms transfers.”

The Secretary of State of the Holy See, Cardinal Casaroli, stated:

“I cannot remain silent about the threat that arms transfers represent. Their negative consequences are obvious in wars which are being waged between developing countries. If law cannot defend the weaker countries, then it is up to the international community to make a strong commitment... to ensure that appropriate measures capable of deterring potential aggression be taken.”

The United Nations Expert Study on International Arms Transfers

In 1987, Italy submitted to the General Assembly a draft resolution entitled “Transfer of conventional armaments”. By it, the Assembly would stress the need to promote measures aimed at constraining international arms trafficking; invite all Governments to intensify at the regional level their search for new, imaginative approaches to the limitation of the arms trade in parallel with conventional disarmament negotiations; and request the Secretary-General to monitor arms trade

trends and to establish a code of conduct for both suppliers and buyers. Subsequently, Italy declared that being aware of the complexity of the matter, the technical, practical and political difficulties involved and the need for further reflection and examination, it had decided to withdraw the draft. In 1988, two draft resolutions were submitted to the General Assembly, one entitled "International arms transfers", which was introduced by Colombia, and one entitled "International transfer of conventional armaments", which was introduced by Italy. As a result of consultations with other Member States, Italy later requested that no action be taken on its draft resolution and joined the co-sponsors of the other draft resolution, which was subsequently amended.

On 7 December, the General Assembly adopted the amended draft resolution by a recorded vote of 110 to 1, with 38 abstentions, as resolution 43/75 I. In its operative part, the Assembly expressed its conviction that arms transfers in all their aspects deserve serious consideration by the international community, *inter alia*, because of: (a) their potential effects in areas where tension and regional conflict threatened international peace and security and national security; (b) their known and potential negative effects on the process of the peaceful social and economic development of all peoples; and (c) increasing illicit and covert arms trafficking.

Because of these negative effects, the General Assembly, by the resolution, requested Member States to consider, *inter alia*, the following measures: (a) reinforcement of their national systems of control and vigilance concerning production and transport of arms; (b) examination of ways and means of refraining from acquiring arms additional to those needed for legitimate national security requirements, taking into account the specific characteristics of each region; and (c) examination of the ways and means of providing for more openness and transparency with regard to world-wide arms transfers.

The resolution further requested the Secretary-General to carry out, with the assistance of governmental experts, a study on ways and means of promoting transparency in international transfers of conventional arms on a universal and non-discriminatory basis, also taking into consideration the views of Member States as well as other relevant information, including that on the problem of the illicit arms trade, for submission to the General Assembly at its forty-sixth session. It is expected that the study will be completed prior to the convening of the forty-sixth regular session of the General Assembly, in 1991.

Conclusion

The trend of the 1980s, towards devoting both increased and more immediate attention to conventional armaments and their regulation on the part of the United Nations, gained momentum as the world moved closer to the decade of the 1990s. Resolution 43/75 I provides a particularly significant indication of the international community's more positive approach to the question of international arms transfers. Indeed, it marks a turning point in the multilateral approach to the question.

In this improved situation, the Disarmament Commission, in 1990, was able to formulate recommendations by consensus on ways to facilitate possible measures in the field of conventional arms reduction, including measures to restrain international arms transfers. In that connection, the Disarmament Commission recommended that arms transfers should be addressed in conjunction with the questions of maintaining international peace and security, reducing international tension, enhancing confidence, and promoting disarmament as well as social and economic development. Restraint and greater openness, the Commission stressed, could help in that respect. Within that context, the grave consequences of illicit traffic in arms deserved substantive consideration. The way should now be open for the United Nations to develop multilateral action with a view to restraining international arms transfers. This is all the more important at this juncture, when the 23 States belonging to the two major alliances are negotiating in Vienna a treaty on conventional arms reductions.

Ways must, indeed, be found to prevent the arms eliminated by the major alliances from becoming the source of increased arms trade and other international arms transfers to developing countries.

As the Secretary-General of the United Nations has stated, there is a need to take a fresh look at the problem of international arms transfers from the vantage point of the ongoing positive changes in the overall world situation; there is a need to focus on the concrete ways in which governmental initiatives as well as multilateral action can help develop an atmosphere conducive to restraint.

PROMOTING RESTRAINT IN INTERNATIONAL ARMS TRANSFERS: AN AMERICAN PERSPECTIVE

Significant changes are taking place across the spectrum of international arms control. The heads of State of the United States and the Soviet Union met in Washington at the end of May to conclude

new agreements in the area of arms control. Solid progress is also being made towards reaching a comprehensive agreement for major reductions in conventional forces in Europe. The United States and the Soviet Union have already made substantial progress in the physical destruction of their existing inventories of intermediate-range ballistic and land-based cruise missiles under the INF Treaty. It is a bitter irony that, just when the United States and the Soviet Union are eliminating this whole class of INF missiles, other countries are expending scarce resources to develop or procure ballistic missile capabilities comparable to what Washington and Moscow have agreed to forgo.

Conventional weapons proliferation is finally beginning to receive some of the attention previously devoted almost exclusively to the problem of nuclear-arms control. While concern for the reduction and ultimate elimination of nuclear weapons is understandable, it is important that we not lose sight of the threat to international security posed by the global spread of so-called conventional weapons. Indiscriminate arms transfers are having a detrimental impact on the security of individual nations, on international peace and security, and on regional stability. Consider, if you will, these troubling facts about the consequences of the continuing proliferation of conventional arms and weapons production technology.

- Since the early 1980s, over 30 conflicts employing conventional weapons have been fought all over the globe or are continuing to be fought.
- Three quarters of the arms that changed hands internationally in 1987 were bought by nations of the developing world, and an increasing percentage of these weapons are being sold by newly industrialising countries.
- Military spending among the less developed countries totalled over \$170 billion. In much of the developing world, military expenditures are almost four times the investment for health care and twice that in education.
- The eight-year conflict between the Islamic Republic of Iran and Iraq alone has been estimated to have absorbed some \$60 billion worth of conventional arms and has resulted, according to some estimates, in over 3 million casualties (killed or wounded) and as many as a million and a half refugees.

There may be no more pressing need and no better opportunity than to apply the same sense of urgency and diligence which has

begun to bear fruit in the areas of strategic arms control and nuclear non-proliferation to a solution of the underlying causes for the continued proliferation of conventional weapons.

Although the United States is a major supplier of defence equipment and services, we are prepared to support meaningful proposals for controlling the international commerce in conventional weapons. We strongly endorse the United Nations Secretary-General's appeal for greater restraint on the part of arms-exporting countries in the supply of weapons to developing countries beyond what is needed for their security from likely aggression. United States policy has long reflected many of the elements embodied in the recent General Assembly resolution on arms transfers: reinforced national controls on the production and transport of arms; the need for greater restraint on the part of recipient States in the acquisition of arms in excess of legitimate national security requirements; and more openness and transparency with regard to arms transfers.

At the same time, we do make the critical distinction between *stabilising* and *destabilising* arms transfers. Arms transfers which meet the legitimate national security requirements of the recipient in ways which do not contribute to the buildup of tension or the eruption of conflict between neighbouring States contribute to stability. Arms transfers which we consider to be destabilising exceed reasonable self-defence needs, permit offensive power projection, stimulate arms races and tend to heighten regional tension and conflict.

It is our belief that arms transfers, judiciously applied, can contribute to international peace and security. As such, our arms transfer policy is an integral part of an overall strategy of international arms restraints which includes: United States and Soviet efforts to reduce nuclear weapons; multilateral efforts to control transfers which could help others to build long-range delivery systems and weapons of mass destruction; and our efforts to bring countries together to develop confidence-building measures for reducing regional tension and conflict.

United States arms transfer policy seeks to maintain an effective balance between supporting the legitimate defence and security needs of our allies and friends, on the one hand, and the need to dampen the international demand for increasingly sophisticated and expensive conventional weapons, particularly in regions of tension and conflict, on the other.

In that spirit and towards that end, on the multilateral level, the United States joined with other advanced-technology-supplying nations

to organise and implement controls on the transfer of chemical precursors and biological warfare agents as well as on the spread of missile delivery systems and related technology. These voluntary supplier restraints—implemented under the Australian group and the Missile Technology Control Regime—are not directed against any particular country or group of countries. They are directed against the dangerous proliferation of weapons of mass destruction. Such multilateral co-operation is an essential first step in gaining the consensus of the international community to halt the further spread of these destabilising weapons systems.

At the bilateral level, we have sought to work closely with other advanced supplier nations to promote voluntary restraints on conventional arms transfers, particularly to areas of tension and conflict. In this regard, we have been heartened by the Soviet Union's statements concerning our mutual interest in curbing the proliferation of destabilising weapons. Arms proliferation and regional stability have become recurring topics for bilateral discussions at the ministerial and summit levels.

While the United States attempts to practise restraint and urges other arms supplier nations to exercise prudence in their pursuit of the international arms trade, it is equally important that recipient nations accept their share of responsibility for the fierce competition for arms sales. This is, after all, a problem which has demand-side as well as supply-side dimensions. We hope that efforts—including the United Nations study being carried out by a group of experts—will focus adequate attention on both sides of the arms transfer equation and on the need for a realistic solution.

PROMOTING RESTRAINT IN INTERNATIONAL ARMS TRANSFERS: A SOVIET PERSPECTIVE

The very fact that the question of restraint in international arms transfers is being raised is of extreme importance. In my opinion, today the urgent character of the problem of the arms trade is becoming especially evident. The scale and qualitative parameters of international arms transfers contrast with the ongoing process of improving the international situation, building greater trust and moving towards real disarmament.

The Soviet-United States Treaty on the elimination of intermediate- and shorter-range missiles (INF Treaty) is now being implemented. The Soviet Union is ready to work actively together with the United

States in order to find satisfactory solutions to the still outstanding issues related to a 50 per cent reduction in strategic offensive arms. We are hopeful that there will be forward movement in drafting an agreement on conventional armed forces in Europe. Much progress has been made in co-ordinating the actions of the Soviet Union and the United States towards achieving the prohibition and elimination of chemical weapons. Active work is under way to prepare for the signing of protocols to the 1974 and 1976 threshold Treaties on nuclear explosions.

The multilateral disarmament process is also moving steadily forward at the negotiations on chemical weapons within the Geneva Conference on Disarmament, at the Vienna talks of the 23 and 35 European States, as well as the United States and Canada, and at the Open Skies conference in Ottawa and Budapest.

It is very important that no "blank spots" remain on "the geographic map" of disarmament, and that measures to limit the arms trade be accorded their proper place on the international disarmament agenda.

It is necessary also because now, as never before, the problem of non-proliferation has acquired urgency in three areas: nuclear arms, chemical weapons and missile technology. The buildup in conventional arms is ever more frequently cited in the context of these issues, and, by its very nature, this problem cements the link between various aspects of non-proliferation. Thus, systems which can be used for delivering weapons of mass destruction, such as missiles, add to the threat of the proliferation of nuclear and chemical weapons. Hence the need to "localize" the spread of these systems by consolidating their non-proliferation regimes, and here as well there seems to be no simple solution. For example, let us take missiles and missile technologies. It is clear that, on the one hand, there must be no infringement upon the legitimate interests of States concerning peaceful access to space, while, on the other hand, the export guidelines and parameters of the existing regime for missiles must be complied with.

The spread of conventional arms, especially of the most dangerous types, is becoming an impediment to reductions in military arsenals, at both the regional and global levels. Serving as a channel for the proliferation of the arms race, international arms transfers destabilise the situation and make regional conflicts ever more murderous and destructive. It would be no exaggeration to say that the arms trade today has assumed a competitive aspect and is virtually out of control. This inevitably erodes trust among nations and reduces the predictability of world politics.

It is sometimes argued that, in order to stop the arms race, it is necessary to eliminate the causes of the regional conflicts in question. Others say that, as long as the arms race continues, the conflicts will continue. I think the solution would probably involve a dual approach: curtailment of the arms race in parallel with efforts towards a peaceful settlement that would eliminate the causes of conflict. This is particularly relevant today, as States become more determined to lessen tension by political means based on the principle of the freedom of choice and on a collective search for a balance of interests among all the parties concerned.

Finally, arms procurement diverts resources from social and economic development programmes, thereby placing additional strains on the economies of many developing countries, generating new external debt and exacerbating the crisis in world economic relations. As emphasised in the Final Document of the 1987 International Conference on the Relationship between Disarmament and Development, while arms exports come mainly from a few developed countries, most arms are imported by developing nations. The adverse consequences of such trade for development far exceed the recipients' security benefits and the suppliers' immediate gains from transactions.

It appears that the time has come for concrete international actions to regulate world arms transfers with a view to limiting and progressively reducing them.

This, of course, is a problem of immense proportions that hardly lends itself to swift solutions, just like any other disarmament problem that really affects the national security and interests of States. Keeping in mind the ultimate goal of general and complete disarmament, we should focus our attention today on realistic step-by-step measures that could contribute in one way or another to the task of curtailing military arsenals and scaling down the arms trade. It would also be fair to say in this context that the need for realism must not make our search any less persistent. Persistence has been vindicated on several occasions in the recent past. One may remember that only five years ago the feasibility of achieving a zero option on intermediate- and shorter-range missiles or of making the military forces of the Warsaw Treaty and the North Atlantic Treaty Organisation (NATO) in Europe structurally incapable of launching a surprise attack was viewed as very nearly nil by the vast majority of politicians. Yet, today we are thinking in the entirely different categories of trust, collective security without blocs, and a common European home. So the limits of the

possible are determined to a large extent by the parties themselves in the dialogue and by the degree of their commitment to achieving results.

The legal history of international efforts to limit arms transfers goes far back in time. Suffice it to recall the 1890 Brussels Act or the Geneva Convention on the monitoring of international trade in arms, munitions and military materials, signed in 1925 under the auspices of the League of Nations.

A major milestone was the 1978 first special session of the United Nations General Assembly devoted to disarmament, which called unanimously for consultations among the States that are the main suppliers and recipients of arms, as well as for negotiations on limiting all types of international trade in conventional arms, based on the principle of undiminished security of the parties concerned, taking into account the needs of recipient nations to protect their security, and with a view to encouraging or increasing stability at lower levels of armament. That forum was the first one to reach an international consensus in the modern context on universally accepted elements of a solution to the problem of curtailing the arms trade—a consensus that appears to have retained its value to this day. As you will recall, the years 1977 and 1978 were the period of Soviet-United States negotiations on limiting conventional arms sales and transfers. The negotiators sought agreement on the political, legal, military and technological criteria of admissible and inadmissible arms transfers as well as on aspects having to do with the listing of alternative suppliers and possibilities of introducing additional limitations for individual regions. The talks made it possible to outline potential approaches to this issue, but for well-known reasons they were later suspended.

A number of substantive proposals were also advanced by the Club of Rome, an authoritative non-governmental organisation which regards scaling down arms transfers as a major task in building a safer future for human civilisation.

The United Nations, too, has repeatedly addressed problems of the international arms trade; resolutions have been adopted by the Security Council banning arms shipments to Southern Rhodesia and South Africa. In recent years, the United Nations has dramatically sharpened its focus on these problems. The arms trade was the subject of lively discussion in the General Assembly at its third special session devoted to disarmament and at its forty-third and forty-fourth regular sessions. The Organisation has passed a number of resolutions on this matter,

and some Member States have communicated to the Secretary-General their views on the problem.

What are the practical ways of coming to grips with the problem under discussion? In most general terms, it may be assumed that the limitation of international transfers of conventional arms should be dealt with in accordance with the principle of reasonable defence sufficiency instead of overarmament, and should apply to the proliferation of the most destructive means of warfare. Among global measures that may be taken, I regard as promising the idea put forward by Italy of setting up a United Nations body to monitor trends in the world arms trade and to develop a code of conduct for arms exporters and importers.

The Soviet Union has on several occasions confirmed its willingness to resume bilateral negotiations with the United States on the limitation of conventional arms sales and transfers and to enter into dialogue with other countries that export and import arms.

Ways to limit international flows of armaments should also be sought at a regional level. It goes without saying that such efforts should respect each nation's inalienable right to defend itself and take into account the particular characteristics of each region involved. In this connection, it is necessary to stress the importance of initiatives for regional conventional disarmament, which should be part and parcel of the new model of global security. I cannot help welcoming the growing attention being paid to this problem by the United and its adoption by consensus of a series of resolutions in support of regional approaches to disarmament.

It might also be useful to seek mutual understanding regarding specific procedures for unilateral and reciprocal restraint, to be exercised by arms exporters and importers with respect to certain areas of conflict with a view to fostering political settlements. There are real opportunities for reaching such understandings at this time.

A huge and excessive military potential has been amassed in the Middle East. The traditional notion that more armaments mean more security still prevails in the region. We have to press for a curtailment of the arms race there while promoting concurrently the process of peaceful settlement. Establishing a regional war risk reduction centre in the Middle East could be a way of achieving that goal. Such a centre could, for instance, operate a data bank on armed force deployments and major movements and on the development, importation and

movement of destabilising types of weapons within the region; monitor the setting up of zones with a lower density of armaments (thinned-out zones) or demilitarised zones; and assist in elaborating other proposals for confidence- and security-building measures.

In Afghanistan, it would be desirable to achieve an international consensus on completely stopping all arms deliveries of whatever origin to the warring sides while simultaneously declaring a pause in the hostilities or halting them. Furthermore, it would be worthwhile to study the possibility of removing all the existing stockpiles of weapons from Afghan territory and of preventing more arms from reaching that country in the future.

The proposal to declare a moratorium on military aid to all sides in Kampuchea as part of a comprehensive settlement package is on the international agenda.

Central America is another example. The Soviet Union has long since stopped sending arms to that region. We in the Soviet Union share the positive view of the outcome of the recent free elections in Nicaragua and of the major new steps being taken to bring down the level of military confrontation in the region, including the Montelimar Document. Of great importance is the agreement reached between the presidents of five Central American States on working out a schedule for negotiations on issues of security, verification, control over and reduction of armaments in the region. The Soviet Union is willing to assist in preparing and implementing possible agreements to that effect, so that Central American States, like States in other regions, would keep their arms and armed forces at the lowest levels consistent with their need for self-defence. Obviously, in looking for ways to limit the international arms trade, one should not lose sight of another fundamental factor: the marked growth over recent years in the number of arms-exporting countries. Whereas in the past we may have been talking in terms of five to ten major arms producers, today, according to data from the Stockholm International Peace Research Institute (SIPRI), that number has risen to nearly forty. Along with developed States, that figure includes countries which until recently were in the category of developing nations. For measures limiting the arms trade to be effective, they will probably have to be international in scope and involve the participation and co-operation of a large number of members of the world community.

We can understand the concern of many States, particularly the smaller ones, over the existing black market in arms. Lately, a growing

number of voices have been raised in favour of pooling the efforts of Governments in fighting the illegal traffic in and deliveries of conventional arms. This is all the more appropriate since arms of most varied origins, which are now illegally circulating everywhere, may constitute a destabilising factor for entire countries and regions, particularly when they fall into the hands of terrorists or drug cartels. It was natural that the United Nations would give its attention to this problem and urge States to strengthen their control systems for monitoring arms production and transit through their territories.

In the Soviet Union both the production and export of arms are the prerogative of the Government. Attempts by anyone else to produce or sell arms are punishable by law.

Guaranteed openness in this area, which would make it possible to disclose the real situation, eliminate many concerns and see more clearly the prospects for international dialogue, may and should facilitate effective measures to limit arms supplies. Naturally, the adoption of the principles of openness and transparency in these matters will be impossible without wider publication of relevant data by every State. That is realised quite clearly in the Soviet Union and that is why we have stated our willingness to participate, within the United Nations, in the joint elaboration of parameters for an arms sales and supplies register.

It is important to welcome and support in every possible way the active involvement of the United Nations in limiting the world traffic in arms. As the co-ordinator of efforts by individual States, the United Nations should, as it does on other vital issues of world security, become a catalyst in the negotiating process, encourage the elaboration of generally acceptable principles of, and approaches to, cutting down military supplies, and ensure that all unilateral, regional and global actions are mutually complementary.

The United Nations is capable of greatly increasing, in the very near future, the potential for confidence and openness in this area. At this moment, a group of governmental experts established under the auspices of the Secretary-General is preparing a study of the ways to promote transparency in international supplies of conventional arms.

It might be worthwhile to consider the possibility of States' submitting data to the United Nations on the main types of weapons they supply. It would probably be useful if Member States published annually information on the size and country-by-country distribution

of their exports of armaments, military equipment, assistance and services.

Of course, the problem of limiting world traffic in arms is complex and multidimensional. The search for international consensus in this area does not yet seem to have reached an advanced stage and has thus far yielded more questions than answers. Nevertheless, joint, ideology-free efforts on the part of States may lead to a constructive balance of interests, thus adding to the stability of the international situation and promoting disarmament on a global scale.

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ITALIAN LEGISLATION ON THE EXPORT OF ARMAMENTS

The export of armaments in Italy was regulated, until quite recently, by general provisions regarding foreign trade, and only in the last few years were certain ministerial decrees approved which specifically governed this subject. There was, however, no precise law: the rulings were fragmentary, there was no normative frame of reference and much was left to administrative practice.

Finally, in July 1990, the Italian Parliament succeeded in passing Statute 185, legislation which lays down new rules for controlling the export, import and transit of defence materials and for granting the relevant licences to produce them.

Statute 185 does not cover ordinary arms. Article 2 of the Statute defines weapons materials as those which, by virtue of their technical characteristics of construction or design, may be regarded as principally intended for military use by armed forces or the police. The Statute prohibits the manufacture, import, export and transit of all biological, chemical and nuclear weapons, and it prohibits research directed towards their production or towards developing the relevant technology.

With this new Statute, the Legislature has at last provided a normative frame of reference for Government, the Executive and all concerned with these matters. The Statute is intended to increase transparency in the armaments market by regulating the procedures for granting licences and by identifying the competent bodies involved, as well as by providing for parliamentary control of the Executive and by taking steps against the illegal traffic in arms. However, it is not clear whether among the objectives of the Legislature was the goal of *reducing* the commerce in weapons materials, in particular their export.

The Statute emerged as a compromise among various political pressures and various ways of addressing the question of the arms trade, and this is abundantly clear both in the text approved by Parliament and in the preparatory drafts.

A law regulating armaments may tend to favour the activities of those operating in the field, and thus become a point of reference by which the trade is facilitated, or it may attempt to achieve a reduction, even a gradual reduction, in the commerce of weaponry. Although the Legislature has clearly stated in Statute 185 that the export of weapons materials must be in line with the Italian Constitution, *it has not always realised the implications of this statement*. There remains a doubt as to whether, by this Statute, Parliament intended not only to regulate the market and prevent illegal traffic, but also to lay the basis for a general reduction in the arms trade.

For example, the Statute makes reference to the question of converting military industries to civilian uses: article 1, paragraph 3, affirms that the Government must make suitable provision to support the gradual shift in production (conversion to civilian purposes) of the defence industry. The Statute establishes a coordinating office to deal with the production of weapons materials, which has the task of providing advice and information and presenting proposals. The Office is to study the problems and prospects of the manufacturing sector in relation to international agreements, and to research means of converting industries and finding non-military uses for weapons materials. These regulations are, however, extremely bland; the articles are couched in very general terms and present no real challenge to Government.

The Statute represents a compromise between three conflicting aims: to safeguard a sector of the Italian economy that employs about 80,000 workers; to maintain an efficient industrial base capable of meeting the nation's defence requirements; and to support the idea of disarmament, even gradual disarmament. Only the practical application of the Statute will reveal which of these aims is destined to prevail, since neither the approved text nor the preparatory drafts furnish clear indications.

First of all, the Statute sets out the general principles within which trade in armaments may take place. Paragraph 1 of article 1 states that the arms trade must be in conformity with Italy's foreign and defence policy and that it must be regulated by the State in accordance with the principles of the Constitution, which rejects war as a means of solving international disputes.

This is, indeed, one of the important aspects of the Statute, which should be emphasised: the arms market involves problems that reach far beyond general questions of foreign trade. It is significant that the Statute transfers the power to grant licences from the Minister of Foreign Trade to the Minister of Foreign Affairs. It is also significant that the Legislature intends to harmonize this sector not only with Italy's defence requirements, but also with its foreign policy. A clarification is necessary here: the act of making foreign policy the point of reference for the whole sector and of recognising that economic and industrial motives are no longer the only considerations does not, in itself, commit the Executive to specific objectives. The Statute's assertion may remain ambiguous. Very often, in fact, the arms trade is used, especially by the major Powers, as an "instrument of foreign policy". This, in my view, is something very different from the correct interpretation of Statute 185, which states that the export, import, and transit of warfare materials must conform to Italy's foreign policy and defence policy.

When I speak of the arms trade being used as an "instrument of foreign policy", I refer to the fact that the sale of armaments, especially by the major exporting countries, is frequently a means of exerting pressures and placing conditions on the importing country in order to create alliances or spheres of influence in a particular area and to strengthen the military resources of friendly countries. To understand the rationale behind the Statute's assertion that the arms trade must conform to Italian foreign policy, the statement has to be seen in the context of the entire text. In particular, it should be seen in relation to the second part of article 1, which states that the arms trade must conform to the principles of the Constitution. Article 11 of the Italian Constitution states that:

"Italy condemns war as an instrument of aggression against the liberties of other peoples and as a means of settling international controversies; it agrees, on conditions of equality with other States, to such limitations of sovereignty as may be necessary for a system calculated to ensure peace and justice between nations; it promotes and encourages international organisations having such ends in view".

If it is thought that this article adumbrates juridical criteria to guide the authorities' choices in foreign policy, then the assertion in the Statute becomes very significant. The implications of article 11 of the Constitution can truly be said to resolve the ambiguities or uncertainties presented by the Statute. Since the Italian State is committed to conducting a

foreign policy directed towards international peace, it is clear that trade in weapons materials cannot possibly be “in line” with the Constitution.

The assertion in paragraph 1 of article 1 is further developed in paragraphs 5 and 6 of the same article. Paragraph 5 establishes the basic criteria which are to regulate trade in armaments and the granting of production licences. It confirms that this trade must not run counter to the Constitution, to Italy’s international undertakings, and to those fundamental claims of State security: the struggle against terrorism and the maintenance of good relations with other countries. There must also be adequate guarantees as to the ultimate destination of the materials. Paragraph 6 adds some important details regarding export and transit. Under (a) it forbids exports to countries in a state of armed conflict contravening Article 51 (right of individual or collective self-defence) of the United Nations Charter. Exceptions are allowed in response to Italy’s international obligations or a decision of the Council of Ministers, to be adopted on agreement by the Chambers.

Article 1, paragraph 6, forbids under (b) the export and transit of armaments to countries whose policies are at variance with article 11 of the Constitution. Here it is intended to make explicit what in any case can be inferred from the Constitution: it is forbidden to export arms to countries which show themselves prepared to use them in aggressive actions against other peoples or to resolve international disputes. Under (c), paragraph 6, export and transit to countries placed under total or partial arms embargo by the United Nations are forbidden. Under (d), in conformity with article 11 of the Constitution, the Statute forbids export to countries whose Governments are guilty of ascertained violations of international human rights agreements.

Finally, the Statute confirms the veto on export to countries that receive development aid from the Italian State but that devote resources in excess of their defence requirements to their military budgets.

It is significant that article 1 of the Statute lays down criteria to be followed by the competent authorities in granting export licences. It should be emphasised that the Statute does not limit itself to matters of procedure, but actually dictates the principles to be followed by the competent bodies in granting licences. Although obviously extremely general, these principles are significant: they form guidelines and act as limits on the discretion of the Executive. Parliament has finally established its prerogative in this field, which, until now, remained the exclusive preserve of the Government.

In paragraph 4 of article 1, the Statute places an important limitation on export and transit, permitting them only if undertaken in conjunction with the Government, or with enterprises authorised by the Government, of the importing country. By this means the Legislature seeks to engage the responsibility of the Governments of countries to which arms are exported, so as to have better guarantees as to their final destination and use. As will shortly be seen, stringent national regulations are required to repress the illegal traffic in arms; regulations, however, are often not sufficient. It is indeed essential to involve the authorities of the importing country, who should commit themselves to prohibiting the re-export of materials acquired.

A notable limitation of the Statute's scope is sanctioned by paragraph 9 (*b*) of article 1, which makes an exception in favour of direct export from State to State for purposes of military assistance according to international agreements. This is a very broad exception, and one that has a bearing on a substantial portion of the armaments trade. Authorisations agreed by Governments in international accords are not subject to Statute 185. It should, however, be said at once that such authorisations are already subject to parliamentary scrutiny. International agreements on military supplies come under the heading of political treaties, which, according to article 80 of the Italian Constitution, require ratification by the Chambers; Parliament is therefore required to participate in the genesis of all such agreements.

With Statute 185, procedures for the granting of licences have at last been fixed, the competent bodies have been determined and the terms by which authorities must decide have been dictated. This is doubly important. On the one hand it makes for greater transparency in the arms market, so that more stringent controls may be exercised and illegal traffic restricted, and, on the other, is an aid for all who operate in the sector, who at last have fixed administrative procedures for obtaining licences to engage in the arms trade.

The Statute identifies various phases in the complex process of granting licences, taking cognizance of different interests (foreign policy, defence policy, industrial and commercial interests) which have a bearing on the arms trade. An initial phase is handled by the Interministerial Committee for the Exchange of Armaments. This Committee, set up by Statute 185, comes under the presidency of the Council of Ministers. It is composed of those ministers most concerned with the subject, and chaired by the President of the Council. It is the President's task to formulate general policy objectives for exchange in the defence sector

and to issue general directives for the import, export and transit of weapons materials. The President also superintends the activities of those bodies concerned with implementing the Statute. The Committee also determines which countries fall within the prohibition envisaged by article 1, paragraph 6. The policies and directives formulated by the Committee must be communicated to Parliament.

A second phase is that dealt with under heading III of the Statute, which speaks of "authorisation to negotiate". Statute 185 establishes the obligation of communicating to the Minister of Foreign Affairs and to the Minister of Defence the commencement of contractual negotiations for the export, import or transit of warfare materials. The Statute directs that within 60 days the Minister of Foreign Affairs, together with the Minister of Defence, may forbid the continuation of negotiations. In the case of countries belonging to the North Atlantic Treaty Organisation (NATO) or the Western European Union (WEU), or where there are particular intergovernmental agreements, a communication to the Minister of Defence is sufficient; he may impose conditions or limitations on the negotiations within the shorter period of 30 days. The Statute explicitly states that the fact of having obtained permission to negotiate does not confer upon the company the right to future permissions, that the arrangements may still be subject to conditions or limitations and that they may be suspended or revoked on expiry of the terms of the permission granted. Permission to negotiate is granted for three years and may be renewed.

The third phase is the actual authorisation of import, export and transit, and the granting of industrial production licences for armaments. It is regulated by the Minister of Foreign Affairs, to whom all requests for permission must be addressed, and it is the Minister who initiates the preliminary inquiries. The Minister of Foreign Affairs decides in conjunction with the Minister of Finance upon the advice of a committee having the function of a technical consultative body, and it is this Committee which, in practice, examines the requests and evaluates their expediency and their conformity to law and to the directives of the Interministerial Committee for the Exchange of Armaments.

The Statute explicitly lays down the obligation of suspending or revoking even the above-mentioned permissions whenever it is apparent that prescribed conditions have not been fulfilled, and it is important that the possibility of revocation or suspension be a real one. Given the length of time that negotiations may take, it is by no means impossible that, after a licence has been granted, certain essential conditions may not be fulfilled.

One of the chief questions to be faced in regulating the export of armaments is the control of their final destination. As we have seen, article 1, paragraph 5, forbids the export of arms where there are inadequate guarantees as to their final destination, and paragraph 4 stipulates that negotiations may be entered into only with a Government or with an enterprise authorised by a Government; part of the reason for this is to ensure better guarantees as to the ultimate destination of the material.

Like the legislation of many other States, Statute 185 requires that the request for permission to export be accompanied by an “end-use certificate”, issued by the Government of the importing country, attesting that the material is for its own use and will not be re-exported without previous permission from the competent Italian authorities.

What is particularly important is that the Statute requires the end-use certificate to be issued by the Government of the importing country and not merely by the importing enterprise. As we have already seen, in order to hamper illegal traffic in arms, it is necessary to ensure the commitment of the authorities of the importing country to oversee the transaction. For this purpose it would be helpful if there were a normative pact by which States would undertake not to permit re-exportation without the prior consent of the exporting country and would maintain stringent controls over all enterprises operating in the sector. However Statute 185 makes no reference to end use in the sense of forbidding the transformation of materials acquired: it speaks only of an undertaking not to re-export the materials to third parties.

The end-use certificate must be validated by the Italian diplomatic or consular authority accredited to the country which releases it, as proof of authenticity. Cases of forged end-use certificates have not been infrequent.

In transactions with countries which have agreed on an “import certificate/delivery procedure”, and where the purchaser is a non-governmental organisation, it is sufficient for an “international import certificate” to be attached to the request for authorisation.

Still with a view to preventing illegal traffic in armaments, the Statute makes provision for follow-up controls to ensure that the materials have indeed reached the destination authorised. Article 20 stipulates that the enterprise must communicate to the Minister of Foreign Affairs, in a timely fashion, the conclusion, even if partial, of the operations authorised. Within 180 days of the conclusion of the

operation, the enterprise must send a “delivery verification certificate” to the Minister of Foreign Affairs, in the case of those taking part with Italy in the above-mentioned arms export controls. Otherwise, customs import entries for the country of final destination must be sent, or proof that the importing enterprise has taken charge of the goods or equivalent documentation must be released by the governmental authority.

At this point it will be useful to summarise the distribution of responsibility among the various departments of the Italian Government. There is a directive phase and a coordinating and informative phase, which are rightly subject to the President of the Council (Interministerial Committee for the Exchange of Armaments and the Coordinating Office for the Production of Armaments Materials). The armaments market involves many and complex interests, and it is important that they should all be brought together under the aegis of the presidency, though obviously with the assistance of other ministries concerned.

With respect to individual authorisation procedures, responsibility lies no longer with the Minister of Foreign Trade, but with the Minister of Foreign Affairs. The Statute rightly recognises that the question of trade in armaments is not merely an economic one: export, in particular, has complex implications for foreign policy. During this phase too, the ministers involved naturally make their contribution, through their representatives in the Consultative Committee. In the authorising procedure an important role is played by the Minister of Defence, who during this phase assists the Minister of Foreign Affairs. The Minister of Defence’s contribution is to ensure that the sale of certain materials does not compromise national defence and that classified technical information is not passed to unauthorised sources.

The bulk of the responsibility falls then upon the troika of President, Minister of Foreign Affairs and Minister of Defence. The Statute correctly identifies the governmental departments which should have competence over the material concerned. Through the Interministerial Committee for the Exchange of Armaments and the Consultative Committee, other ministers have their say. I should observe that the armaments trade has its effect on internal security, on industrial policy, on foreign trade and on monetary affairs.

With its Statute 185, the Legislature has finally subjected the arms trade to disciplinary control, establishing the framework within which the Executive must act. The Statute also provides for specific modes of control by Parliament on the conduct of the Executive. Article 5 directs

that the President of the Council must himself inform Parliament by 31 March of each year concerning the operations authorised and carried out by 31 December of the preceding year. This article is one of the lynch-pins of the entire Statute, for parliamentary control in this matter is fundamental.

We have seen how important it is to establish stringent controls to eliminate the illegal traffic in armaments, but it is well to recall that the illegal trade represents only a small portion of the whole armaments market: the great majority of arms movements take place under authorisation by the competent governmental authorities. This is why it is vital to establish checks on the activities of the Executive in this field. It is important, in other words, to enable Parliament to exercise that degree of control to which it is entitled over a matter so delicate in its effects on the foreign and defence policies of the nation. The annual statement which the President of the Council has to make to Parliament will become one of the means by which Parliament will be able to evaluate governmental foreign policy, and therefore also to direct it.

Parliament's power of direction and control is conditioned by the quantity and quality of the information supplied to it. Since Statute 185 has established precise obligations regarding this information, it should now be possible for Parliament to verify the conduct of the Government and of the public administration. Article 5 is of the greatest importance since, through it, the Government's decisions on certain policy questions will be made known—something which, until recently, has not been the case.

This is bound to lead to greater transparency in the arms market, and also to reduction in the collusion possible between public administration and the exporting enterprises, with the further effect of permitting informed public debate on the subject.

STRATEGIC EXPORTS CONTROL AND DISARMAMENT IN FRANCE

During the last few decades, France has become a nuclear Power and one of the world's leading arms exporters. Its defence industry provides direct employment to 300,000 people and indirectly affects 1 million jobs. In addition, French companies and laboratories are involved in most modern civilian technologies, especially those which may have an indirect military application, such as nuclear energy, data processing, telecommunications, aeronautics, space launchers and satellites, and

the chemical industry. For this reason, all developments and discussions in the areas of disarmament and non-proliferation are of particular concern to France. As a permanent member of the United Nations Security Council, France cannot relinquish its obligations with respect to the maintenance of international peace solely for the sake of its own military and industrial interests.

War Materials Export Regulation in France

Principles of Regulation

Three main principles sum up France's approach to war materials regulation: all industrial and business activities involving such materials are subject to advance approval; all exports are prohibited except by specific governmental waiver; and the French administrative authorities retain absolute discretionary control over the granting of such waivers.

The French Government organised the manufacture and sale of war materials in 1939, on the eve of the Second World War. A decree-law of 18 April 1939, still in force today, lists eight categories of materials considered to be "war materials, weapons and munitions" and establishes the rule that "companies engaged in the production or sale of war materials and of defence weapons and munitions (categories 1,2,3, 4) may only operate, and the activities of their intermediaries or publicity agents may only be carried out, upon governmental approval and under governmental control." As a result, all companies manufacturing or selling arms are subject to governmental controls bearing on the nationality of the company's capital and management, the regulations for the protection of confidentiality and security within these companies, the technical level of the production process and the materials produced, as well as their cost price.

The same decree-law also stipulates that "exports of war materials and related materials under any customs regime without approval is prohibited." The principle therefore is to prohibit arms exports, which entails prohibiting all operations associated with their export:

"No purchase order for the export of materials referred to in the following article may be accepted without advance approval under the conditions established by interministerial order. Similarly, no demonstration or test for the purpose of transfer or delivery involving the materials referred to above and defined under the aforementioned order may be carried out without such approval. The same provisions shall apply to the transfer of commercial manufacturing licences

and to all the documents required for carrying out such manufacture.”

Arms exports from France thus become exceptions to the principle of non-export and are authorised by the Government on a limited basis. The same situation exists for war material imports.

The issuance of authorisation for the manufacturing, sale and export of war materials therefore remains a prerogative of the Government, which, in this respect, is endowed with great freedom of action. While a decree dated 12 March 1973 establishes some specific rules regarding the conditions to be met in order to obtain the authorisation to manufacture and sell, no mandatory legal criterion exists under French regulations that would set conditions for the export of arms. Such export authorisation decisions therefore fall within the Administration’s discretionary power and come under what French public law terms “governmental acts”, that is to say, acts which are not subject to recourse to administrative tribunals by reason of the close correlation between arms exports and political and diplomatic options essential to the State.

The question of international arms trade control, in France as in many other countries, is therefore entirely in the hands of governmental officials. Several administrative procedures are available to them for that purpose.

Administrative Procedures Governing Arms Export Control

In France, exporting war material requires a number of consecutive authorisations that are dealt with in detail in a decree dated 12 March 1973. They are: authorisations to solicit and negotiate sales, followed by the final export authorisation (i.e., a waiver of the export prohibition). This multi-level system is peculiar to France, as most Western countries have a single export authorisation procedure. A special list (divided into four categories: A, B, C and D) brings together all materials subject to these export control procedures. The list, which is part of an order dated 2 April 1971, is more specific than that mentioned above for materials requiring manufacturing and sales authorisations. While their contents are fairly similar, the 1971 list includes some civilian products such as space launchers and helicopters in addition to war materials proper.

The first two authorisations (to solicit and to negotiate sales, respectively) are issued on behalf of the Prime Minister by the General Secretariat for National Defence upon authorisation from the Inter-

Departmental Study Commission for War Materials Exports (*Commission interministerielle d'étude des exportations de matériel de guerre*) (CIEEMG)). The Commission, created in 1949 and modified in 1955, meets monthly under the chairmanship of the General Secretariat for National Defence and is attended by the representatives of the three ministries chiefly concerned (Finance, Foreign Affairs, Defence), with the frequent participation of other departments (Industry and Cooperation, for example). In practice, the office of the International Relations Delegation (*Délégation aux relations internationales*) (DRI) of the General Armaments Delegation carries out the prior investigation of authorisation requests submitted. Indeed, it is this office of the Ministry of Defence which coordinates daily with French manufacturers involved in arms export projects. Each authorisation request must provide fairly precise information regarding the material, the country for which it is destined, the possible intermediaries, and the total sales anticipated. Once a solicitation authorisation is granted, it remains valid for five years, while the validity of the other authorisations (negotiation, sale) is limited to one year. In the first quarter of 1991, the Government considered relaxing the system by eliminating the requirement for advance approval of the sales solicitation phase. However, disclosure of this project in the press some weeks after the end of hostilities with Iraq persuaded the Government to postpone the easing of this procedure as it might appear a form of laxity on its part at a time of great concern about proliferation and the lack of arms control.

Once an export contract is concluded following issuance of the first two authorisations, the regulations require that the manufacturer obtain two additional authorisations: final approval from CIEEMG for the sale of the material, and a War Material Export Authorisation (*Automatisme d'exportation de matériel de guerre*) (AEMG) from the Ministry of Finance; the latter constitutes the official document allowing the material to leave the national territory as a waiver of the export prohibition applying to all armaments.

The authorisation for sale is issued by the General Secretariat for National Defence upon notice from CIEEMG under the same conditions as the authorisations for solicitation and negotiation. Legally, the sales authorisation cannot be granted without having been preceded by the corresponding sales solicitation and negotiation authorisations. On the other hand, prior issuance of these two authorisations does not ensure that the sales authorisation will be automatically granted, and it may still be denied or postponed either for specific military reasons or as a

result of political and strategic changes occurring in the region. Although some criteria remain unofficial and are not mandatory, they are used regularly to assess the advisability of a sale involving the export of war material:

“the advisability from the diplomatic standpoint of the sale of a particular type of armament to a specific client in terms of present or foreseeable relations between France and that country; the economic consequences, particularly as they affect the balance of trade between the two countries; the client’s solvency and the credit terms; preservation of secrecy...”

Once the sales approval has been granted, the French manufacturer has one year (with the possibility of renewal) to manufacture and deliver the material; but before it is actually exported, an AEMG from the General Customs Directorate (Ministry of Finance) must be obtained. The AEMG is the official customs document required to ascertain that export is made under waiver of the general export prohibition, as mandated by the decree-law of 1939. The request for an AEMG and the statement of export authorisation must be submitted by the exporter to the DRI, a branch of the General Armaments Delegation, to be approved by it and transmitted in turn, first to the General Secretariat for National Defence, and then to the Ministry for Foreign Affairs. These written statements make it possible for the ministries concerned to verify that the export request was in fact preceded by a sales authorisation issued with the approval of CIEEMG. They also make possible a final check of the advisability of exporting before the material actually leaves the country. The General Customs Directorate delivers the AEMG to the exporter after approval by all ministries.

In order to complete the authorisation and control procedure, the French authorities have two additional devices that are meant to guarantee that the material is delivered to the intended client and to ensure that it is not diverted. One, largely a legal device, consists of a clause inserted in the sales agreement that prohibits re-export (*clause de non-reexportation*). Such a clause may read as follows:

“The buyer hereby agrees not to sell, lend or deliver, for any reason, free of charge or otherwise, on a temporary or final basis, to any third party, without the prior written approval of the French Government, the materials which are the object of the present agreement, including materials and parts covered by the service agreement, documentation, operating instructions and any other information connected with the present agreement.”

The other device consists of a security deposit generally required to be paid to Customs in the form of a lump sum, which is held by it pending proof from the exporter that the material has indeed reached its destination and that it has not been re-exported.

Control of the Export of Other Strategic Products and Technologies

In addition to its control of war materials proper, France, like most other Western countries, extends its control to other kinds of products and technologies that may be put to indirect military use. These may be grouped in two categories: dual-use products and technologies monitored by the Coordinating Committee of Western countries regarding export controls (COCOM) and products and technologies controlled for “non-proliferation” reasons.

Products and Technologies Controlled under COCOM

France has participated in the consultation process with other Western countries under the aegis of COCOM since its inception in 1949 on the initiative of the United States. The Committee, established in Paris, includes 17 countries (all the members of the Atlantic Alliance except Iceland, plus Japan and Australia). Its function is to embargo exports of a series of products and technologies of a military and nuclear nature, and also of dual-use civilian products destined for the USSR, China and nine other communist or formerly communist countries (Poland, Hungary, Czechoslovakia, Bulgaria, Romania, Albania, the Democratic People’s Republic of Korea, Vietnam, and Mongolia). Although international developments will probably greatly change the functions of COCOM, it is still in operation and France continues to apply its directives.

France publishes regularly the list of products and technologies established and updated by COCOM in the form of a “notice to importers and exporters concerning products and technologies subject to end-user control”. This information, published in the *Journal Officiel*, consists of a list of war materials (which covers products similar to those controlled nationally by war materials regulations), a list of nuclear materials and plants, and many articles on high technology civilian industrial products and processes (data processing, telecommunications, robotics, machine tools, aeronautics, electronics, etc.) that could be used indirectly for military purposes. A mandatory statement heads the lists, which describes the customs export control procedures applicable to those products and technologies.

This “end-user control” (*controle de la destination finale* (CDF)) procedure is based on a few simple rules. In the first place, all of the products mentioned in the list are considered to be “prohibited goods” as defined by the Customs Code, which means that their export is prohibited except by special authorisation. That authorisation is given by Customs in the form of an export licence, “Licence 02”. This licence must be requested for all exports of products subject to end-user control. For countries members of COCOM (the “Group 1 countries”), and for seven others (Austria, Finland, Ireland, Singapore, Sweden, Switzerland, Yugoslavia, and for Hong Kong as well—the “Group 2 countries”), applications for Licence 02 must be accompanied by an import certificate already issued by the local authorities to the foreign client. Similarly, for all these countries (except Switzerland), a second certificate must be submitted by the client on receipt of goods, to be transmitted to the French Customs.

After a licence application has been made, it is first examined by SAFICO (*Service des automations financières et commerciales/Financial and Commercial Authorisation Service* within the General Customs Directorate) and then by the Ministry of Industry to verify that the product concerned is in fact referred to in the control lists. If such is the case, the French Government alone may decide whether to authorise or to prohibit the proposed export unless the country of export is one of the 11 “target countries” (i.e., the 11 communist or formerly communist countries referred to above), in which case the French Government is required to submit to COCOM a request, which must receive the unanimous agreement of the 16 other members before France can issue the export licence. The second function of COCOM, in addition to issuing lists, is to grant waivers to the embargo on a case-by-case basis. If COCOM should fail to reach a unanimous decision to grant the waiver, then Licence 02 may not be issued to the French exporter, whose export application will be denied as a result.

There is only one exception to the mandatory referral to COCOM for export of end-user controlled products to the target countries: cases where the list of controlled products provides for an “administrative facilitation”. This allows the export of lower-performance technology products to target countries to be the exclusive decision of the exporting country. In that case/Licence 02 is issued by the French Government at its sole discretion.

It is also possible for the exporter of end-user controlled products to non-target countries to make use of specific export licences such as

the distribution licence, permitting issuance of a permanent export authorisation— against the exporter's commitment to accept some internal controls—without formalities for specifically designated products to specifically defined clients. Since February 1991, there is also a G 1 Licence which makes it possible to export most controlled products without specific formalities to Ireland and to the countries belonging to COCOM. Finally, there are some specific licences to export spare parts and for the temporary export of portable professional equipment.

Proliferating Products and Technologies

France also participates in various international activities aimed at limiting the international proliferation of certain technologies and weapons considered particularly dangerous.

Firstly, France publishes a list of nuclear products and materials established by the group of nuclear equipment suppliers called the "London Club". The latest list was published in *the Journal Officiel* of 12 August 1988. All products, plants or materials listed (most of which are also on the COCOM list) may also be exported after issuance of Licence 02, which is in turn issued after approval from an interministerial group, the Restricted Interministerial Group, under the authority of the Council for Foreign Nuclear Policy.

With regard to ballistic products, France is a founding signatory to the Missile Technology Control Regime (MTCR) of 1987, an agreement among the seven members of the group of most industrialised nations. Under the agreement, export controls apply to all products and technologies related to the manufacture and guidance of all space vehicles capable of carrying a payload exceeding 500 kg over a distance exceeding 300 km. However, because in France most products on the MTCR list are already on the war materials list of 1971 and on the end-user control list of COCOM products, the French authorities have not considered it useful to publish a special list. Nevertheless, in 1990, a preliminary reduction in the COCOM list made it necessary for France to publish a short list of four ballistic items, previously controlled by COCOM, which had just been released for export to Eastern countries while remaining on the controlled list for other countries by virtue of MTCR and for the sake of ballistic non-proliferation.

Similarly, although France is conducting a large-scale international campaign for a new convention banning chemical weapons, to date it has yet to publish an export control list in this area. Although it is taking part in the work of an informal group of Western countries on

these matters (Australia Group), the French Government has chosen to exercise discreet export controls over proliferating chemical products through informal contact with leading French suppliers and manufacturers in that sector. Moreover, French exporters, like other European exporters, are required to abide by the control regulations established in 1989 by the European Community for eight precursor chemical products.

Adaptation of the French System to Disarmament Needs

The French export control system, as it stands today, does not yet wholly fulfil disarmament needs nor those arising from the new international context brought about in particular by the collapse of the Eastern European communist regimes and by the Gulf conflict. As a result, adaptations are in preparation or being implemented, and an official announcement was made of a comprehensive disarmament plan, which will define the French Government's conduct in the years to come.

Necessary Adaptations

With respect to the products controlled by COCOM, France does not appear inclined to put forward any initiatives of its own beyond those jointly adopted by the Committee's 17 members. These consist mainly of the adoption of a new, drastically reduced list of products and technologies termed the "core list". The list was adopted in the first half of 1991 and came into effect in various other countries on 1 September 1991. France, for its part, is expected to publish it by the end of 1991. Like its COCOM partners, France has also reached bilateral agreements with Hungary, Poland and Czechoslovakia to ease imports of French technology controlled by COCOM in these three countries, on the condition that they apply their own controls. It would appear that in the future the French Government will favour a continued and progressive relaxation of COCOM regulations in this respect, as liberalisation progresses and there is a further opening up of the Soviet political and economic situation.

The area of proliferating products is more complicated. Here, France has indicated its intention to strengthen modalities in the struggle against different types of proliferation in the wake of the Gulf war. A statement concerning chemical products and technologies appears to be ready for publication, but remains blocked at the interministerial level. Also, when COCOM's new core list is published in France, some ballistic and electronics products that were formerly controlled under

COCOM -and are now freed are to be kept under national control for reasons of non-proliferation. In time, it would seem that the COCOM list, which served as a screen to monitor exports of sensitive products, not only to communist countries but beyond them to the whole world, will no longer be able to play this role and it would be advisable for France and its partners to adopt specific lists and procedures to control proliferation of some products towards unstable or aggressive countries of the south.

With respect to war materials, France is currently working, through both European and international channels, towards the creation of a kind of good conduct code for arms exports, which would be put into effect among the major arms suppliers. In the meantime, a regulatory text replacing the order of 1971 is expected to be issued in the coming months, which will provide, in particular, a new reference list covering war materials subject to export control and to CIEEMG notice. The content of the list should be closer to that established by COCOM for arms materials and should also focus more clearly on certain areas, such as specific production machinery and types of military components.

Announcement of a Comprehensive Plan

On 3 June 1991, the President of the Republic, Francois Mitterrand, made public a global disarmament plan that consolidates all French proposals on these matters for the years ahead. One of the main points of the plan is the announcement that France will accede to the nuclear non-proliferation Treaty, which it was already observing unilaterally but had not officially signed. In addition, the plan reaffirms France's intention to promote stronger measures of chemical disarmament (an appeal for the signing of an international agreement); bacteriological disarmament (proposal for the addition of a protocol on verification to the 1972 biological weapons Convention); and ballistic missile control (call for a more comprehensive and stronger MTCR). Lastly, the French President called for a concerted policy of "restraint" among the major armament exporters and the establishment of regional machinery for the settlement of conflicts and control of the balance of military forces. The statement concludes that it is therefore the task of the United Nations Security Council to endorse and, if necessary, harmonize those disarmament and non-proliferation policies. The Council should promote regional and multilateral disarmament and non-proliferation agreements, as well as agreements on specific categories of weapons. It could define general rules on the basis of the agreements made and would thus exercise a global monitoring function. This would of course imply

exemplary conduct by the members of the Security Council, especially its permanent members.

Conclusion

A characteristic feature of the French strategic export control system is its regulatory disparity. At a time when interest in disarmament is again strong and when international trends are rapidly evolving, it seems inadequate despite its relative effectiveness. Consideration is therefore being given to these matters at the relevant governmental levels. However, behind the first steps of adjustment and the policy statements, one senses clearly that the French authorities are still groping for a new model to replace the machinery worked out during the cold-war and post-war periods. The prospect of a Europeanisation of some of these controls, or, at any rate, their foundations (product lists, common evaluation criteria) might offer a path for medium-term progress. One year before the final establishment of a single European market, the trade in strategic products, to which the Treaty of Rome is in principle not directly applicable, can no longer remain completely outside Europe's movement towards economic and political integration.

THE CONTROL OF ARMS EXPORTS IN THE FEDERAL REPUBLIC OF GERMANY

The participation of German companies in the development and production of weapons and in the construction of weapons factories abroad, most notably in the Libyan Arab Jamahiriya and Iraq, has attracted a great deal of attention from the international public. In response, the Federal Government has enacted numerous legislative measures designed to strengthen German export controls. The basic outline of the law has, however, remained untouched. This article gives an overview of the political and legal regime applicable to the export of arms from the Federal Republic of Germany, reflecting developments up to October 1991.

Fundamental to the German law of export controls is the distinction between military weapons, on the one hand, and industrial equipment that is of potential military and strategic significance (dual-use goods), on the other. Tight restrictions are imposed on the export of military weapons, while a liberal approach governs the export of dual-use goods.

Military Weapons

The majority of German exports of arms are destined to countries belonging to the North Atlantic Treaty Organisation (NATO) as part of overall cooperation within the alliance. As far as exports to the

third world are concerned, German exports of major weapons are relatively insignificant, compared to those of the Soviet Union or Western Powers. During the five-year period from 1985 through 1989, German exports of major weapons to the third world averaged \$0.4 billion per year. During the same five-year period, exports from the Soviet Union to the third world amounted to an average of more than \$9 billion per year. The equivalent figures for the United States, France and the United Kingdom were, respectively, \$4.3 billion, \$2.5 billion and \$1.1 billion. (Figures are in United States dollars.)

Overall, the exports of weapons (including to NATO countries) constitute a mere 0.1 per cent of the German gross national product and 0.3 per cent of total exports. Thus, the Federal Republic of Germany, despite being a major industrial Power, is not a major exporter of weapons.

Constitutional and Statutory Framework

These economic figures result from an extremely restrictive legal regime. In order to prevent a recurrence of the events that led to World War II, the German Constitution, enacted in 1949, prohibits military aggression and "offensive war" (*Angriffskrieg*—article 26, paragraph 1).

According to article 26, paragraph 2, of the Constitution, the production, transportation and selling of arms which can be used in armed conflicts requires a licence from the Federal Government.

Article 26 of the German Constitution reflects the basic commitment by the Federal Republic of Germany not to contribute to armed conflicts in anyway; this constitutional provision is the cornerstone of Germany's restrictive policy towards the export of arms.

The Control of Military Weapons Act (*Kriegs-waffenkontrollgesetz*) implements the constitutional provision of article 26, paragraph 2, of the Constitution. While the Control of Military Weapons Act covers the production, sale and export of military weapons, the Foreign Trade and Payments Act (*Aussenwirtschaftsgesetz*) and the Foreign Trade and Payments Regulation (*Aussenwirtschaftsverordnung*) focus primarily on dual-use goods. However, the Foreign Trade and Payments Act and the Foreign Trade and Payments Regulation also extend to military weapons, in effect subjecting the export of military weapons to a dual requirement of licensing.

Principles for Arms Exports, 1982

In 1982, under the then existing coalition led by the Social Democratic Party (SPD), the Federal Cabinet laid down principles for the licensing

of arms exports. These principles continue to govern the licensing of arms exports today. The principles distinguish between exports of weapons to NATO countries and exports to the rest of the world:

Export to and Cooperation with NATO Countries

It is presumed that the export of arms to NATO countries will generally serve to strengthen the defensive capabilities of the Western Alliance. Exports are, in principle, not to be restricted. However, the German Government must be satisfied that the exported goods will indeed remain in the country of purchase.

The same principles apply to agreements involving cooperation and co-production among German companies and companies from other NATO countries.

Export to Non-NATO Countries

The export of military weapons to non-NATO countries will not be permitted, unless either

- general exceptions are made based on political considerations
- in the case of a specific application, it is considered that the vital interests of the Federal Republic of Germany would be furthered by granting the requested licence. Such vital interests are interests of either foreign policy or national security, including the interests of NATO.

The first alternative appears not to have played a major role in the past. Under no circumstances must the exports of weapons to non-NATO countries increase existing tensions. Therefore, exports to countries where there is a danger of the outbreak of hostilities will, in principle, not be permitted. Furthermore, there must be sufficient assurance that the weapons exported will serve defensive rather than aggressive purposes. To the extent possible, given the restrictions imposed by public international law, the final destination of goods will be strictly controlled. As expressly stated, considerations of employment policy will not determine the decision.

Dual-Use Products

While the export of military weapons can be controlled reasonably well, there are far greater practical, legal and administrative problems involved in controlling the export of dual-use products. These products form a large proportion of the approximately 18 million deliveries of exports that cross the German border every year. The final destination of these goods is often far from clear, and even more difficult to control.

Constitutional and Statutory Framework

The German Constitution, in article 12 and in article 2, paragraph 1, guarantees the private freedom to pursue economic activity. While these fundamental guarantees—as almost any rule of national law—are primarily designed to govern existing domestic situations, the Federal Constitutional Court has applied them in cases where governmental action was taken to regulate contact abroad.

These fundamental rights are, however, not without limitation. The State may, either by statute or on the basis of statutory authority, enact measures which limit the exercise of these fundamental rights, provided the measures taken by the State are supported by public policy. Such public policy can be derived from a constitutional mandate such as article 26, paragraph 2; it can also be based upon a political value judgement made by the legislative branch of Government.

The core of German export control law is contained in the Foreign Trade and Payments Act (*Aussenwirtschafts-gesetz*) and the Foreign Trade and Payments Regulation (*Aussenwirtschaftsverordnung*). The Foreign Trade and Payments Act provides the basic statutory authority for restrictions placed upon private persons and enterprises in their economic dealings with persons and enterprises in foreign countries and with foreign countries. The Foreign Trade and Payments Regulation is enacted by the executive branch, that is, the Federal Cabinet, based upon authorisation contained in the Act.

Shifting Focus of Export Controls

In Germany, export controls have traditionally been targeted at the communist countries on the basis of consensus reached by Western Powers within the institutional framework of COCOM (Coordinating Committee of Western countries on export controls). Recent political developments in Eastern Europe have led to a considerable liberalisation of COCOM rules. COCOM is presently working on a further reduction of controls.

This development has had repercussions on the control of exports to countries other than those belonging to the Eastern bloc, as the restrictions on the export of strategic goods to them has also acted as a de facto control of exports to other countries. Controls targeted at the Eastern bloc have regulated exports to almost all other countries in order to guard against circumvention of COCOM rules by funnelling deliveries to the Eastern bloc through a third country. The loosening of COCOM restrictions has automatically loosened the concomitant export controls to third countries.

At the same time, the need to control exports to non-communist countries, especially countries of the third world, has become even greater, as evidenced by the Rhabta affair or the contribution by German firms and scientists to the military build-up of Iraq.

The Reform of 1989-1991

The illegal construction of a “fertilizer plant” — widely recognised as a facility to produce poisonous gas— in Rhabta, Libya by a German firm, discovered in early 1989, caused the German Government to undertake a comprehensive overhaul of the legal and administrative regime governing and controlling exports. The bulk of the reform of 1989 and 1990 concerns dual-use goods and technologies.

Overview

The most significant features of the reform include:

- The strengthening of provisions of the Military Weapons Control Act,
- The establishment of a list of countries to which special controls would apply,
- The adoption by the Federal Cabinet of principles for assessing the reliability of exporters.

In February 1991, the Federal Ministers of Economics proposed a final ten-point package that has stirred public controversy and remains pending in Parliament.

Specific Measures

New controls were introduced targeting specific countries as destinations for exports. Examples are the “Lex Rhabta”, banning exports destined for a poison gas plant in Libya and exports for an in-flight refuelling project, also in Libya. Other controls are specifically targeted at the Syrian Arab Republic, Lebanon and Libya, covering, for example, the export and transit of such seemingly innocent products as hang gliders, which can be used for terrorist purposes, and the export of police patrol boats. Even before the United Nations embargo, licences had been required for certain exports to Iraq, connected with the country’s arms programme, for example, for the super-gun project, helicopters, heavy presses and forges and certain parts of a gas centrifuge.

These experiences have made it clear that, the Government requires an instrument with which it can react on an ad hoc basis and within hours to address a certain and limited problem concerning a specific

AGGREGATE TABLES OF THE VALUE OF THE TRADE IN MAJOR WEAPONS WITH THE THIRD WORLD, 1970-89

TABLE 1

Values of Imports of Major Weapons by the Third World: by Region, 1970-89^o

Figures are SIPRI trend indicator values, as expressed in US \$m., at constant (1985) prices. A = yearly figures, B = five-year moving averages.^b

<i>Region^c</i>		1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
South Asia	A	857	1274	1800	1049	936	584	1066	1932	1 871	1425	2424	2583	2688	2364	2036	2727	4965	5867	4847	6906
	B	1 135	1181	1183	1 129	1087	1 113	1 278	1376	1 744	2047	2198	2297	2419	2480	2956	3592	4089	5063	—	—
Far East	A	2299	3582	6962	1 815	1920	1595	1490	1 983	3779	5944	3085	2972	1777	2564	2861	3 156	3266	3073	4118	3279
	B	3697	3329	3316	3175	2757	1761	2154	2958	3256	3553	3511	3268	2652	2666	2725	2984	3295	3378	—	—
Middle East	A	5242	6092	5842	10472	6999	7014	7076	9816	7675	6216	8377	9402	11336	11774	11008	9691	10371	12812	7463	3270
	B	4813	6179	6930	7284	7481	8276	7716	7560	7832	8297	8601	9421	10379	10642	10836	11 131	10269	8721	—	—
North Africa	A	185	224	373	340	591	2343	2282	2619	3936	5749	3334	2990	3050	1 703	1499	1 113	1 393	538	381	1185
	B	258	293	342	774	1 186	1 635	2354	3386	3584	3726	3812	3365	2515	2071	1752	1 249	985	922	—	—
South America	A	285	786	1 093	2354	1338	1 600	1922	2836	2335	1635	2137	3215	2509	2878	2980	1 219	1 124	1 655	824	963
	B	628	1033	1 171	1434	1 661	2010	2006	2066	2 173	2432	2367	2475	2744	2560	2142	1971	1560	1 157	—	—
Sub-Saharan Africa	A	389	441	266	466	869	645	1 044	2562	2520	909	1535	2095	1728	1406	1937	2007	1 667	1 834	1392	397
	B	278	339	486	537	658	1117	1528	1536	1 714	1924	1757	1 534	1 740	1835	1749	1 770	1 767	1 459	—	—
Central America	A	185	135	261	309	299	204	234	557	268	295	187	657	1092	901	599	659	618	371	203	300
	B	140	191	238	242	261	321	312	312	308	393	500	626	687	782	774	630	490	430	—	—
South Africa	A	275	104	292	459	533	232	371	171	343	102	109	4	4	158	5	4	154	20	28	3
	B	181	240	333	324	378	353	330	244	219	146	112	75	56	35	65	68	42	42	—	—
Total	A	9717	12639	16890	17263	13486	14217	15485	2477	22728	22 275	21189	23917	24184	23748	22925	20576	23560	26170	19256	16301
	B	11130	12784	13999	14899	15468	16586	17679	9436	20831	22517	22858	23063	23193	23070	22999	23396	22497	21 173	—	—

a. The values include licensed production of major weapons in Third World countries (see appendix 7C). For the values for the period 1951-69, see Brzoska, M. and Ohlson, T., SIPRI, *Arms Transfers to the Third World, 1971-85* (Oxford University Press: Oxford, 1987).

- b. Five-year moving averages are calculated as a more stable measure of the trend in arms imports than the often erratic year-to-year figures.
- c. The regions are listed in rank order according to their values in the column for 1989. The following countries are included in each region:

South Asia: Afghanistan, Bangladesh, India, Nepal, Pakistan and Sri Lanka.

Far East: Brunei, Fiji, Indonesia, Kampuchea, North Korea, South Korea, Laos, Malaysia, Mongolia, Myanmar (formerly Burma), Papua New Guinea, Philippines, Samoa, Singapore, Solomon Islands, Taiwan, Thailand, Vanuatu and Viet Nam.

Middle East: Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria, United Arab Emirates, North Yemen and South Yemen.

North Africa: Algeria, Libya, Morocco and Tunisia.

South America: Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay and Venezuela.

Sub-Saharan Africa: Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo Cote d'Ivoire, Djibouti, Equatorial Guinea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sierra Leone, Somalia, Sudan, Swaziland, Tanzania, Togo, Uganda, Zaire, Zambia and Zimbabwe.

Central America: Bahamas, Barbados, Belize, Costa Rica, Cuba, Dominican Republic, Dominica, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, St Vincent and the Grenadines, and Trinidad and Tobago.

- d. Items may not add up to totals due to rounding.
- Not applicable.

Source: SIPRI data base.

TABLE 2

Values of Exports of Major Weapons to Regions Listed in Table 7A.1: by Supplier, 1970-89^a

Figures are SIPRI trend indicator values, as expressed in US \$m., at constant (1985) prices. A = yearly figures, B = five-year moving averages.^b

Supplier ^c		1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
USSR	A	4589	5991	7851	7263	5314	3680	4509	7589	10010	11 126	9277	8370	7565	7578	7537	8563	10327	10759	8238	8515
	B	5 139	5594	6202	6020	5723	5671	6220	7383	8502	9274	9270	8783	8065	7923	8314	8953	9085	9280	—	—
USA	A	3551	3787	5804	6318	4352	6866	7064	9 525	6850	3961	5637	6 155	6989	6205	4906	4024	4925	6270	3 649	2 528
	B	3693	4514	4762	5425	6081	6825	6931	6853	6607	6425	5918	5789	5978	5656	5410	5266	4755	4279	—	—
France	A	687	683	796	1 654	1270	1 168	1 440	2276	2 131	3033	2617	3511	3 181	3070	3212	3588	3355	2518	1312	1527
	B	605	820	1 018	1 114	1 266	1562	1 657	2010	1299	2714	2894	3082	3 118	3312	3281	3 148	2797	2460	—	—
UK	A	472	1214	1 195	1 309	1 070	1 193	833	1 652	1 214	766	725	1 101	1594	676	1083	903	1 020	1 530	1 165	993
	B	897	1055	1 052	1 196	1 120	1 211	1 192	1 132	1038	1092	1080	973	1036	1071	1055	1042	1 140	1 122	—	—
China	A	134	358	417	229	368	338	233	120	465	418	625	334	700	890	1210	1017	1 193	1960	1781	718
	B	231	245	301	342	317	258	305	315	372	393	509	593	752	830	1002	1254	1432	1 334	—	—
Israel	A	5	1	34	4	67	127	61	59	470	227	209	252	365	370	263	160	242	273	117	216
	B	10	10	22	47	59	64	157	189	205	244	305	285	292	282	280	262	211	202	—	—
Brazil	A	—	—	—	—	11	25	154	130	120	112	268	271	202	298	271	172	134	491	338	182
	B	0	0	2	7	38	64	88	108	157	180	195	230	262	243	215	273	281	264	—	—
FR Germany	A	3	86	108	—	462	269	166	204	258	162	283	938	323	1 174	1830	395	649	252	480	149
	B	58	51	132	185	201	220	272	212	215	369	393	576	910	932	874	860	721	385	—	—
Spain	A	—	—	10	—	—	5	3	13	30	21	9	97	360	589	475	139	185	160	206	143
	B	5	3	2	3	4	4	10	14	15	34	103	215	306	332	349	310	233	167	—	—
Italy	A	37	95	137	148	273	144	163	288	323	975	654	1333	1350	1048	831	578	398	319	360	30
	B	95	100	138	159	173	203	238	379	481	715	927	1072	1043	1028	841	635	497	337	—	—
Other Third World	A	26	48	134	30	184	146	227	187	95	507	194	485	580	885	631	430	477	604	684	164
	B	50	53	84	108	144	155	168	232	242	294	372	530	555	602	601	606	565	472	—	—
Other industrialized West ^d	A	68	223	327	254	83	207	506	184	457	301	230	282	437	431	141	129	203	447	461	604
	B	197	223	191	219	276	247	288	331	336	291	341	336	304	284	268	270	276	369	—	—

<i>Supplier</i>		1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Other industrialized. neutral ^e	A	3	95	5	10	13	24	63	68	36	485	316	360	202	249	207	263	272	385	282	150
	B	24	25	25	29	23	36	41	135	193	253	280	322	267	256	239	275	282	271	—	—
Other industrialized. Hast ^f	A	143	60	72	44	19	23	63	183	268	181	145	426	336	284	329	216	180	202	181	383
	B	127	91	68	44	44	67	111	144	168	241	271	275	304	318	269	242	222	232	—	—
Total	A	9717	12639	16890	17263	13486	14217	15485	2477	22728	22275	21 189	23917	24 184	23748	22925	20576	23560	26170	19256	16301
	B	11 130	12784	13999	14899	15 468	16586	17679	9436	20831	22517	22858	23063	23193	23070	22999	23396	22497	21 173	—	—

- a. The values include licensed production of major weapons in Third World countries (see appendix 7C). For the values for the period 1951-69, see Brzoska. M. and Ohlson, T., SIPRI, *Arms Transfers to the Third World, 1971-85* (Oxford University Press: Oxford 1987).
- b. Five-year moving averages are calculated as a more stable measure of the trend in arms imports than the often erratic year-to-year figures.
- c. The regions are listed in rank order according to their values in the column for 1989
- d. Other NATO, Australia and Japan.
- e. Austria New Zealand, Sweden, Switzerland and Yugoslavia.
- f. Other WTO.
- Nil.
- Not applicable.

Source: SIPRI data base.

country. A new provision giving the Minister of Economics the necessary powers has been proposed (*Einzelermächtigung*).

In reacting to the shifting focus of export controls, the Federal Government created a new list of countries to which all future controls outside or in place of COCOM would refer. This list, Country List H, presently contains 54 countries. The introduction of Country List H makes the Federal Republic of Germany the first country to take this step towards building a comprehensive export control outside the East-West context. Inclusion in the list is based on not always fully verifiable indications of possibly dangerous arms projects or the passing on of technologies to third countries. It does not mean that exports to these countries cannot take place in all. It triggers, however, a thorough examination of applications for export licences for these countries.

There were a great number of further amendments, including the strengthening of provisions of criminal law and provisions directed at German nationals not resident in Germany, which are too numerous to be described here.

Outlook: Export Controls and the Single European Market

The European Community is working towards achieving a single market, which will eventually bring about the abolition of all physical checks at the border between member States. While military weapons might continue to fall under article 223 of the Treaty of Rome, which excludes defence matters from the scope of the Treaty, the lack of border checks will make enforcement of the German Military Weapons Control Act more difficult.

Regarding dual-use goods, it will be necessary to define a common EEC standard for the export of such goods to non-member States.

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**INTERNATIONAL DIALOGUE
AND THE CONVERSION OF
THE ARMAMENTS INDUSTRY**

The 1990s and the New International Scenario

After reaching a low point in the first half of the 1980s, East-West relations have undergone a gradual improvement, which culminated in December 1989 in the summit meeting between General Secretary Mikhail Gorbachev and President George Bush in Malta. From the tone and substance of the discussions between the two leaders, it is possible to deduce that this new phase in international relations will be accompanied by a process of detente in the military sphere as well.

It is no coincidence that Mr. Gorbachev's new strategic thought on the shared character of security issues has received such keen attention in the West. In fact, while bearing the mark of Mr. Gorbachev's innovative personality, it may be viewed as the putting into practice of a theoretical approach, deeply rooted in the last two decades of Western culture, a systematic approach, based on consideration of the limits on the growth and the interdependence of the various subsystems. These considerations spring from a whole series of critical events, ranging from the 1973 oil crisis to the Chernobyl catastrophe. The opinion has become widespread in the public at large, in scientific circles, and even among politicians, that the survival and well-being of each separate part are closely linked to the survival and well-being of all the other parts of the world system. If this is the case in the economic and environmental spheres, it is difficult to imagine that it would not be so in the field of security also.

Above and beyond the outcome of current negotiations on arms control (conventional forces in Vienna, strategic weapons in Geneva), concerning which there is in any case reason to feel optimistic, the

path to disarmament appears to be cleared, at least as far as the North is concerned. Without underestimating the dramatic nature of hot spots still remaining in the South, the North has up till now had the dubious distinction of bearing the greatest responsibility for, and suffering the highest exposure to, the risks of a generalised conflict—the consequences of which would be apocalyptic.

This does not mean, of course, that disarmament represents a path of no return for either the North or the South. Even setting aside the political dimension and concentrating solely on the socio-economic aspect, which is the object of this paper, one can see forces that are in favour of, and others which are opposed to, such a process. A look at the two systems—the socialist and the market economy, represented by the USSR and the United States—reveals both analogies and differences as far as conversion factors are concerned. In the USSR, public proprietorship of the means of production renders the relocation of investment priorities from military to civilian sectors relatively simple. Were the political leadership of that country to become aware (as it appears today to have done) of the unbearable cost of competing militarily with the West, there would be no private capital capable of opposing the new directives. The case is not problem-free, however. The military-industrial complex is not, in fact, an exclusively economic phenomenon but rather a point of intersection of economic, political and social phenomena. Even at a favourable political conjuncture such as the present one, the inertia of social and institutional factors involved in the military apparatus in the USSR should not be underestimated. Apart from professional military men, whose support of the new course may well be conditioned by their identification with the institutions to which they belong, some workers may attempt to resist the erosion of privileges and guarantees heretofore associated with the military production industries.

In the United States, conversion is destined to encounter obstacles that are at least as serious. There, where the labour market is very dynamic, social constraints will be fewer but difficulties of an economic order will be greater because many private companies participate in military production and obtain exceptionally good technological and financial rewards from it. Federal funds allotted to defence, furthermore, have up to now played the part of a Keynesian multiplier, which it will be possible to replace with public expenditure in the civilian sphere only after major social and political innovations'.

Conversion Hypotheses

The idea that military industries should be transformed into firms producing civilian goods is not a new one. In the mid-1970s, peace movements in both the United Kingdom and the United States and independent research centres formulated such a hypothesis in terms of its political possibilities and technical feasibility. It must be remembered, furthermore, that at the end of the Second World War (two years earlier, even, in the United States), industries involved in military types of production rapidly transformed their structures to meet the new demand for civilian products.

What is more, modern firms have been organised in such a way as to allow for the rapid identification of new product types, and for the adoption of whatever steps are necessary to produce them; this is particularly true of multinational companies, especially if they operate in more than one sector (conglomerates), and of large national industrial groups, but it is also characteristic of many firms of average size.

The problems encountered by proposals for converting military industries must be examined, therefore, on several different levels, and it is there that the meaning and practicality of the hypotheses discussed in this paper should be assessed.

In the past, studies on the conversion of specific military industries and bases were carried out with a view to countering State and company plans to restructure them so as to increase their efficiency in the performance of activities of military interest. It was, in other words, a matter of concentrating production and installations and of eliminating what was deemed to be superfluous manpower; not of reducing activities of a military nature or of diversifying them towards civilian uses. In these cases, conversion hypotheses were aimed above all at saving jobs, and their main political merit—judging in retrospect—was that they suggested some civilian products which could have been made to avoid the firing of employees and the shutting-down of installations.

A second level of analysis concerns the indication that “disarmament/development” is a coupling of concepts which enjoys the favour of a large majority of the Members of the United Nations. From the beginning of the 1960s the United Nations began preparing analyses showing that significant and essential advantages would accrue to the development policies of the countries of the so-called third world from the reduction in military expenses which would follow in the wake of disarmament agreements. Despite the interest in such analyses, it is

obvious that difficulties in communication between the great Powers and a spiralling tendency towards rearmament turned these numerous studies into academic exercises, almost entirely lacking in political effect. It is worth recalling that Sweden alone developed a plan for the conversion of the national war industry, despite the fact that the United Nations had invited all producer countries to do so. Even in this case, therefore, conversion hypotheses were validated only by external conditions, that is, by the state of negotiations on disarmament between the two super-Powers and by trends in the international weapons market.

Finally, even when conversion hypotheses were outlined by the peace movement, considered in all the multiplicity of its aspects, it was difficult to deny that more often than not they were only statements of principle based on a strongly negative opinion of arms production in general (and of arms exportation in particular). In reality, the economic importance of the war industry, the role it plays in the industrial policies of the major producer countries, the nationalistic value which it has for many countries that are in many ways underdeveloped: all those factors have often been underestimated. If this is the picture that can be drawn of the last thirty years, what has changed in recent times? Are the changes that have occurred great enough to render proposals for the conversion of military industries worthy of realistic and urgent consideration?

Conversion Constraints and Perspectives

The turning-point in the international situation occurred in 1987 with the signing of the Treaty on the Elimination of Intermediate-Range and Shorter-Range Missiles— the INF Treaty—because it was then that the two super-Powers finally gave a clear indication that their military relations could be organised in a new way. From the economic point of view, furthermore, it should be recalled that for the first time there was an agreement to dismantle missiles and warheads, and a part of the market was then closed to the industries in that sector. On the other hand, in a realistic appraisal of the agreement the fact should not be overlooked that the warheads (which were to be eliminated over a period of several years) represent less than 3 per cent of the operative arsenal; that the labour forces and industries involved in the nuclear sphere represent but a small part of the war industry as a whole; that the introduction of new weapons systems and only a few upgradings could easily compensate for any “loss of power” entailed by the INF Treaty. In succeeding months, however, the arms reduction process did not lose impetus; on the contrary,

unequivocal signs continue to come from the great Powers. In particular, the Soviet Union and the other countries of the Warsaw Pact have announced considerable reductions in their armed forces stationed in Europe; at present, statistics are insufficient to allow an estimate of the immediate and important negative effects in market terms (spare parts, replacements, upgradings, reparations) suffered by industries, but it is clear that market perspectives are changing.

On the diplomatic bargaining level, furthermore, the process of defining an agreement for the reduction of conventional (non-nuclear) weapons is going ahead; the proposals of the two parties for fixing the ceilings for each type of arms and for delimiting the areas within which approved units could be deployed, are well known. Forecasts of the nature of possible agreements are still uncertain: what is certain is that surplus weapons systems will have to be destroyed; and that only from that moment on will industries be able to evaluate the new sizes of the markets.

It must not be forgotten, on the other hand, that it is precisely in this phase that there is increasing pressure from military firms to speed up the upgrading processes and to adapt weapons systems to highly sophisticated technologies. Unless modified by political constraints, the foreseeable strategy of firms will be to compensate for quantitative reductions with increases of a qualitative nature in research and development and to produce weapons systems which, though perhaps “smaller”, are more invulnerable and precise.

The other factor that must be taken into consideration is the question of demand in the underdeveloped countries, which has drastically diminished in recent years, largely because of the increasing burden resulting from the accumulation of their foreign debt. It is in fact well known that about one third of the credits those countries have received was approved in order to enable them to purchase weapons from the industrialised countries, and up until the eve of the first efforts to apply the so-called Brady plan—the plan proposed by United States Treasury Secretary Nicholas F. Brady for the alleviation of the debt problem of developing countries—very little else was done to reduce their debt. It is difficult to imagine there being a demand for weapons, in the coming years, of similar proportions to that which existed in the 1970s and 1980s; moreover, the end of certain “regional wars” (in particular the war between Iran and Iraq) has undoubtedly reduced the demand for complete systems, ammunition, spare parts, and the like. Obviously, however, some of the countries which have just emerged

from a conflict will try to rebuild their stockpiles, both in order to guarantee their own security and in order not to find themselves unarmed if conflict should resume.

One Nation's Case: Italy

In a context of East-West detente and the saturation of the markets of the South, how will arms industries react? It may be interesting to try to answer that question by examining the case of a country such as Italy.

Italy is, in fact, an industrialised nation, one which has in recent years been a not-insignificant producer and exporter of weapons, and yet it is not burdened with great responsibilities in the field of military politics. Unlike its European partners, furthermore, Italy does not seem to have concentrated its production in the same way as the French, British or German military industries. Italy therefore appears relatively open to innovative solutions in the field of conversion.

In 1989 the Italian Parliament began discussing measures for the conversion of Italian military production facilities, and a committee was set up in the Ministero delle Partecipazioni Statali to study the applicability of such a conversion process to publicly owned industries. The labour unions, for their part, have drawn up a joint document in which they express their position in favour of such a process; there is the risk, however, that some factory councils will not adhere fully to the strategy the unions have adopted.

Even if it is evident by now that it will be negotiations on the international level that will set both the schedule for the process and the political deadlines for conversion, it is hard to deny that the drawing up of a "national plan" for the diversification and conversion of military industries might constitute a valid contribution to the "new course" taken in relations between the United States and USSR. Even if the "plan"—like the one drawn up by Sweden—were only a detailed projection of possible government choices and envisaged a lengthy timetable for reductions in the size of the sector, it would undoubtedly send out a clear signal with regard to the nature of Italy's position.

Even if its enactment were subordinated to analogous and reciprocal commitments on the part of other producer countries and if it were aimed first and foremost at protecting patrimonies of technological know-how, company organisations and jobs, its existence would enable the government, political parties and labour unions to define their

choices and actions in the sector without the precipitate action created by emergency situations.

The first phase of a research programme being carried out by Archivio Disarmo, a non-governmental organisation specialising in research into peace and disarmament issues, was completed in 1989, ahead of official schedule.

The study pertained to five firms located in the industrial district of Rome and had as its object the identification of civilian products which could be manufactured instead of military ones. The study ascertained the technological and organisational capacities required for the production of certain specific types of products, and identified a series of products which, by virtue of their characteristics, constituted valid alternatives to the military productions of Selenia, Elmer, Mes, Elettronica and Sistel, five firms operating in the electronics sector.

More specifically, products falling into the following categories were identified:

- Civilian products that had in the past been manufactured or investigated by the firms in question; especially detailed evaluations should indicate the real causes of the interruption of their production and investigation;
- Military products that can easily be transformed into products for civilian use, excluding those already widely marketed by the firms and those whose applications could only be military;
- Civilian products in the process of being designed or already produced by the war industries, which could sustain a rapid increase in production, given adequate incentives, or even public support for their marketing;
- Products for civilian use which could be manufactured without special modification of existing installations and equipment, even if they might require specific changes in the commercial structure;
- Products for civilian use requiring special machinery and new, substantial investments, but where the firms already possessed the technical-organisational capacity for the new industrial-scale production.

In brief, the investigation was oriented towards other possibilities which are very close to the current reality of the firms in question. Products whose social utility is very great but which are very far from

the organisational and executive experience and the know-how already possessed by the firms were not given preference. On the contrary, conversion was understood to be a process of gradual utilisation, in the civilian sphere, of the greatest possible part of the technologies already possessed by the industries and, therefore, as a form of diversification, involving also a reduction of military production and an increase in the share civilian production would play in the overall revenue.

It should also be noted that most of the ideas for products came from the factories, that is they were suggested by technicians, workers, and representatives of firms, whereas the analytical dossiers were drawn-up by outside experts. These methods, in addition to guaranteeing a close connection between conversion hypotheses and those who might carry them out in the future, open the doors to analogous studies performed in other regions with high concentrations of military industries. In particular, it could be used by those observers who wish to give high priority to conversion problems in their work programmes.

Over forty products, largely related to the teledetection and electromedical sectors, have been identified so far; for each product there is a series of dossiers describing its technical characteristics and offering some preliminary estimates of its market possibilities. Naturally, the dossiers do not go so far as to provide a real evaluation of markets or define a commercial strategy; such activities are the task of those companies that choose to adopt conversion policies, since the final responsibility for a decision belongs to them and no one else can guarantee sales or profit levels.

In addition to identifying alternative products, the study succeeded in defining, even if only as a first approximation, a "zone programme". The decision was made not to develop diversification and conversion plans for the individual firms, since their lack of support would in effect have nullified the purpose of the study. Rather, what is presented is a programme of alternative production ideas which the firms can carry out either individually or in collaboration with others. Industries other than those considered could therefore contribute to the programme, and this possibility opens considerable opportunities for contact with programmes for other regional zones with high arms-industry concentrations. The programme also indicates possibilities that exist for public, financial and supportive intervention. The choice made by the researchers to envisage the firms receiving assistance during the phase of transition from military to civilian production may undoubtedly

raise some criticism. It cannot be denied that, in this way, further financing and concessions would be given to the very war industry that had elicited so much criticism and opposition. Yet, in a realistic sense one should not forget that it is difficult to pass from protected products offering extremely high profits to products that have to be placed on markets that are open to competitors and about which little is known.

Conclusion

There is one thing, however, that must not be overlooked: financing and concessions will be granted only in exchange for a more-than-verbal commitment not to return to military production. The idea, in other words, is that the collectivity can assume such a burden only if it is guaranteeing for itself the progressive conversion of war industries, and especially the cutting down to size of those economic power centres which up to now have stimulated and supported the arms race and provided fuel to conflicts.

ECONOMIC CONVERSION: PREPARING FOR PEACE

The twentieth century has seen more than its share of economic trauma and devastating war. In much of the world, actual progress in improving broad-based economic well-being has fallen far short of aspirations. An international arms race of staggering proportions has captured the attention and a considerable amount of the critical economic resources of many of the world's nations.

Yet as we enter the last decade of this century, the prospects for improving this state of affairs have become dramatically better. Political shifts and a wider readiness to consider new economic possibilities have created a climate in which the centuries-old dream of converting "swords into plowshares" has met with the hard realities of unattained economic goals to create a compelling force for positive change. Still, it will take a great deal of careful, pragmatic action to capitalise on this opportunity.

Nowhere do the vision of a more peaceful and prosperous world and the practical business of getting from here to there come together more strongly than in the issue of economic conversion; for no matter how desirable the shift away from the dangers of the international arms race may be, the transition of people and facilities from military to civilian activity is not a simple matter. If not properly attended to, the period of transition will be fraught with difficulty and filled with

opposition from those whose livelihoods and status are at present derived from their participation in military-oriented activity.

The United Nations has been deeply involved in trying to bring about progress in both disarmament and development, and it has been a leader in making clear the vital connection between these two critical goals. The enormous military diversion of productive resources in the world in general and in the third world in particular has greatly dimmed the prospects for sharply raising standards of living in the less developed countries. At the same time, establishing a stable and just peace in a disarmed and demilitarised world will remain an elusive goal unless there is real progress in development. In furtherance of these dual objectives, the United Nations now has a key role to play in moving conversion to the centre of the world stage, for while conversion does not in itself establish peace or achieve development, it stands as a critical transition strategy for smoothing the path to both these goals.

What Is to Be Converted?

Before it is possible to prepare any concrete plans for conversion, it is necessary to have sufficient data to fully understand what is to be converted. Data on the numbers, skills, location and other key characteristics of personnel in military forces and in the sectors of the economy that directly serve the military are indispensable to those planning conversion. So are data on the location, age, layout, capacities and other key characteristics of the physical equipment and facilities involved (other than the weapons systems themselves). However, the need for these data runs up against the reluctance of Governments to disclose such information. In part, this is due to legitimate security concerns; in part, it is merely the result of entrenched habits and patterns of secrecy that sensitivity to these issues has created over time. In any case, this conflict seems to create a basic problem. How is it to be handled?

Actually, the conflict may not be as severe as it appears to be. We must first consider exactly who needs what specific information in order for conversion to succeed. There are some broad elements of conversion in any country that need to be taken into account by those responsible for the overall economic planning (in socialist countries) or regulatory policy (in market economies). The national Government may desire to direct special assistance to particular sectors of the economy or regions of the country that will be seriously affected by a shift from military to civilian activity. Or it may simply wish to avoid policy

actions that appear to be called for by other domestic considerations (such as the nation's short-run general economic situation) but will impede successful conversion.

The kinds of data needed for these purposes are quite general—overall numbers of personnel involved by broad categories (how many engineers and scientists, production workers, managers, clerical workers etc. will be affected); overall data on physical facilities (how much of the nation's metalworking machinery, how much of its electronics industry etc. will be involved); and the general geographical pattern of military dependency. In the first place, these data can be kept general enough to avoid being of any great value to other nations or subnational groups viewed as a serious security threat. And perhaps more important, it may be desirable, though not critical, that they be circulated to the general public. The key economic decision-makers within the non-military agencies of the national Government itself are those for whom these data are most crucial. Thus it should be possible to maintain a degree of confidentiality, should that be considered necessary.

This is somewhat complicated by the fact that regional and local levels of government would be much more effective in helping to mitigate the negative and maximise the positive impact of conversion if they had sufficient information to know what was likely to be happening within their own jurisdiction. Local levels of government—or local representatives of national Government—are after all more likely to be involved in direct delivery of conversion-related services and support. They should at least know how much demand will be placed on their capacities.

But those who are actually going to plan and carry out what could be called the "factory-level" conversion of facilities and work-forces cannot hope to be successful without a great deal of very specific information about the characteristics of the labour force, equipment and facilities they are attempting to convert. At this critical level, conversion plans must be tailored to these specifics, or they will have little chance of success. Setting aside the issue of military-base conversions for the moment, this is a strong argument for a highly decentralised planning process.

In economies in which the bulk of military-serving production is done by privately operated companies, the companies themselves—particularly the managements and workforces of each given military-oriented factory, laboratory or "think-tank"—are aware of these details

as they apply to their own labour force and facilities. It is only necessary for the personnel within the company assigned the task of developing and implementing the conversion plan to have access to that information. It need never be made available to anyone outside the company. Thus, if a highly decentralised model of conversion planning and implementation is pursued, it is not only more likely to be done well, but it is also possible to avoid spreading sensitive data around. It is not necessary to release such information to anyone who is not a part of the organisation that already has the data.

Highly decentralised planning may also achieve similar objectives in economies structured along a socialist model. The level of detail necessary for successfully blueprinting the conversion process is enormous. Requiring that flood of information to be gathered locally and transmitted to the centre is not only time-consuming at the periphery, but overwhelming at the centre. Unless the country is quite small, it is a prescription for inefficiency. And it results in an unduly large number of people having access to potentially sensitive information. Decentralised conversion planning makes a great deal more sense.

Whether an economy is socialist or market-oriented, the system of military bases is always government-operated. Depending on whether or not the facility is to stay in the control of the Government, the kind of detailed information required to convert it may be held internal to the Government or may need to be made more public. This disclosure problem may actually be more sensitive than that involved with production facilities and the like, since some details of the layout and facilities of military bases are much more revealing of their military mission.

The issue of converting foreign military bases raises some additional questions. Should the Government that operates the military base provide detailed information not otherwise available to the host country well in advance of its withdrawal from the facility? How much of the non-weapons equipment at the base should be transferred to the control of the host country on withdrawal? To what extent is it necessary or desirable for the country operating the base and the host country to co-operate in jointly planning the conversion? It may be that these questions can only really be answered by bilateral negotiation, on a case-by-case basis. At any rate, the conversion of foreign military bases raises important additional issues that deserve separate attention.

One final point about data. Making available more of the data that describe at least the general outlines of a nation's military system (for

example, overall military budget, number of uniformed military personnel, numbers of engineers and scientists engaged in military research) is not only useful for conversion planning, but may also be an important confidence-building measure. In addition, it will permit a wider debate as to the alternative civilian-oriented uses of the resources involved, a debate that is likely to be very useful in generating support for the movement towards a less militarised world.

How Does the Operation of the Military Sector Differ from the Operation of the Civilian Sector within Each Nation's Economy?

By its very nature, the military-serving sector of the economy tends to operate by other rules than does the civilian-oriented sector. This is perhaps most striking in market economies. Rather than facing strong competitive pressures to hold costs down in multi-customer markets, military firms face a single (and often very well funded) government customer whose primary interest is in maximising product performance rather than minimising cost. Even when the firms are privately owned, the operational structure of the military-oriented sector in market economies often resembles that of an outpost of the Government itself more than it resembles private commercial, market-oriented business.

The military-oriented sector of planned economies— especially highly militarised planned economies—tends to have privileged access to productive resources. As one of the key instruments of the Government, the military typically has high status, which it in turn conveys to the research, development and production system that serves it. Such preferential treatment leads to a different mode of operation from that which is common in the civilian sector.

Whatever the precise differences may be in any particular country, the point is that the operating environment of research, development and production in the military sector will be very different from that of civilian research, development and production. It is absolutely crucial to effective conversion to have the clearest and most thorough understanding of these differences possible. After all, it is difficult to carry out any transition well without a thorough knowledge of both the origin and the destination.

Those who stand at a distance—say in the central Government—often tend to underestimate the differences between the military and civilian sectors, and therefore the magnitude of the problem of transferring from one to the other. Those at the “factory level” are less likely to do so. Still, they may not understand the detailed operational

differences as well as they must in order to plan and implement conversion. Something must therefore be done to convey a full and detailed appreciation of these differences to those who will be planning and implementing conversion.

The simplest way to achieve this is to establish some sort of institutional mechanism that will bring together those who must blueprint the conversion and those who are already operating successfully in the civilian sphere. The most appropriate way to do so in any particular country will depend on political and cultural factors as well as on the nature of the economic system. It would also seem useful to develop a cadre of consultants specialising in these precise problems. In some cases, those responsible for the conversion of a particular facility or work-force might wish to bring in experienced technical consultants from other nations or from trusted international organisations, such as the United Nations. But, however it is done, it is critical to make those in positions of responsibility and influence far more sensitive to, and informed about, these crucial operational differences than they now appear to be.

Convert to What?

Conversion is an inherently prescriptive issue. It is not possible to talk intelligently about it without raising the question of where the process is headed. It is not enough to have general ideas about the good things that could be done with the resources released from military activity. There must be specific alternative civilian activities developed for those people and facilities now servicing the armed forces.

Whether an economy is planned or market-oriented, it would be useful for the nation to develop an explicit agenda of national needs—civilian areas of activity that address what that nation perceives to be the critical civilian problems that it faces. The national needs agenda should be wide-ranging, including not only traditional public works projects (such as road-building or sewage treatment) but also projects aimed at attacking key social problems (such as alcoholism or crime). The Government involved could then determine the kinds of specific projects in which it could and should be involved that will address those problems. Next, the resource requirements of these projects could be compared with the supply of resources released as a result of conversion. A subset of projects could then be selected that would both address the needs and serve as reasonable alternative activities for the facilities and work-forces to be converted.

In a planned economy, these projects could be directly integrated into the planning process. In a market economy, the Government might undertake to award contracts for the projects for which direct government involvement is politically acceptable. It might encourage other projects, either by preferential tax treatment (such as targeted investment tax credits) or special financing. And it might seek to build interest in others by bringing the issue persuasively to public attention. However, it is highly likely in market economies that the private sector will generate many of its own alternatives in the process of seeking profitable markets. This is as it should be. As mentioned earlier, privately owned enterprises that service the military branch of government have little in common with private, commercially-oriented firms that form the basis of a market economy. There is no particular reason to continue to protect them from the discipline of the competitive market-place. Doing so will only retard their full integration into the underlying economic system.

The development of *international* needs agendas, on a regional and global basis, could also be encouraged. There is little doubt that some of the most critical problems facing the world are best solved co-operatively. Many of these also present alternative agendas of useful economic opportunities for the resources that are being converted. Technical fixes will certainly not solve problems of global pollution or stagnated development. But the most pragmatic solutions to these problems may have components that could usefully employ scientific and technical skills now focused on military R & D. The productive capacity of other forms of labour and capital released from military activities could likewise play a role in producing a range of goods (such as pollution-control devices and equipment for more environmentally benign forms of power generation) that would also further these objectives. It would certainly be within the purview and historical role of the United Nations to help instigate a process of developing such needs agendas, along with practical projects that would move them forward.

These large-scope projects might be divided into sub-projects that are co-ordinated internationally but funded independently by each of the nations that undertakes responsibility to carry them out. Alternatively, an international fund to support key global infrastructure and environmental projects could be established. The fund could be created with financing provided by contributions equal to an agreed fraction of the money saved as each member nation's military

expenditures are reduced. Access to the fund could also be made dependent on the extent to which the nations involved had cut back on their arms expenditure.

A sufficient number of civilian options must be found if conversion is to be successful. To be sure, each nation will approach the search for these options in a different way, but it would be desirable to have a degree of international co-operation so that the gains from conversion might be turned most effectively to the benefit of the largest possible fraction of the world's population.

An Action Agenda for Conversion

In this crucial time of change, the United Nations can make a major contribution in helping to educate, to encourage and to co-ordinate some of the activities so vital to smooth and successful conversion. There are those actions which the United Nations itself could initiate, and those which the United Nations can press its Members to undertake. The following list is intended to be illustrative; it is certainly not comprehensive.

Actions by the United Nations

The United Nations could take the following actions:

1. Create a cadre of conversion experts available to assist any national Government upon request. There may be experts on the United Nations staff, or lists of "certified" consultants that the United Nations will make available. This may be achieved in part by setting up a training programme under the auspices of the United Nations or perhaps by providing dissertation fellowships and other similar educational assistance to persons interested in pursuing this area of work in their studies at existing educational institutions.
2. Publish a conversion guidelines handbook, designed to assist anyone in the public or private sector of any nation charged with or interested in conversion planning, providing guidance through the key issues involved in detailed "blueprinting" of conversion.
3. Urge all Member States to set up conversion mechanisms within their countries.
4. Publish a "Conversion Worldbook", describing each country's conversion plans and giving names, addresses and telephone

numbers of contact persons within each country who can provide further information.

5. With the co-operation of national Governments, gather data on, and publish estimates of, the extent of diversion of the world's economic resources of military-oriented activity—perhaps especially of scientists and engineers, by discipline and general area of activity.
6. Develop a “world technology needs agenda” specifically designed to absorb the mix of engineers and scientists estimated above into civilian activities that address pressing international issues of disarmament (for example, verification technologies), development, environment and the like.

Actions by National Governments

National Governments could take the following actions:

1. Create and institutionalise economic conversion planning mechanisms capable of handling the economic transition required by any level of reduction in military forces, down to and including the level of national police forces. These mechanisms will surely be different for market and planned economies, and may entail varying degrees of direct government involvement. A market economy may, for example, want to develop mechanisms which emphasise decentralised private-sector (for example, corporate) planning, with little government involvement, or may opt for some sort of market government planning mix (for example, as the United States did after the Second World War). Similarly, a planned economy may opt for creating mechanisms that would insemminate a new private sector with the resources released from military activity, or may opt for direct government planning for the shift to civilian activities, with those activities remaining under government control.
2. Adopt specific legislation to encourage economic conversion planning on an ongoing “contingency” basis. This could be particularly useful. Such legislation should include specific funding mechanisms, public or private, to be used to finance both the planning and the implementation of economic conversion.
3. Ensure that all international arms-control agreements specify conversion plans as part of their verification procedures. Specifying what facilities and work-forces are to be removed

from military activity and redirected to civilian use in an arms-control agreement has two important functions. First of all, it helps to make clear whether or not the agreement does in fact involve a real reduction of military activity. Thus, agreements made more for the purpose of public relations than for serious arms reduction would be more obviously labelled as such. If it is not possible to show real conversion as a result of the agreement, then clearly the agreement does not involve a net reduction in military-oriented activity. Secondly, it simplifies and strengthens verification. For example, say a given factory has been making missiles now banned under a new agreement, and the nation involved specifies that the facility and its workforce will be converted to making mass-transit vehicles: if the amount of mass-transit vehicles being produced is consistent with the full-capacity utilisation of the factory and its workforce, it cannot also be producing missiles covertly. Further, it is also possible to place inspectors in the converted facility. As it is now civilian, there should be no breach of security involved in having the inspectors present.

4. Publicly commit a specified fraction of the savings in military expenditure resulting from unilateral reductions or from any international arms-reduction agreement to finance projects aimed at creating greater security through non-military means, for example, increased international economic development, reduced resources depletion, or reduced environmental pollution.

Conclusion

In the early decades of this century, humanity was introduced to the terror of mechanised war, as the brilliant achievements of the industrial revolution came to the battlefield with horrifying results. In the middle of this century, the devastation of Hiroshima and Nagasaki introduced us to the nuclear age, as the brilliant achievements of science were turned to the purpose of mass destruction on a hitherto unimaginable scale. Now at the end of this century, we are entering a decade of great challenge and unprecedented opportunity. We can never make right all the horror this century has known, but we have a better chance than ever before to learn from what we have done, to concentrate the brilliance of our industry and our science on the enhancement of human dignity and the improvement of human well-being. In the final analysis, that is what economic conversion is all about.

We have a better chance today than we may see for a very long time to make this dream a reality. If we act decisively now, we can set the stage for a better, less fearful future. We cannot afford to miss this opportunity.

CONVERSION: THE HUNGARIAN CASE PROSPECTS AND PROBLEMS IN THE LATE 1980s AND EARLY 1990s

Reforms and Conversion

Fulfilment of the Biblical prophecy that “they shall beat their swords into plowshares” seems possible in our era. The recent dramatic changes in Eastern Europe indicate that such hopes are by no means unfounded. In parallel with large-scale political democratisation and economic reforms, foreign policies and defence strategies are also undergoing radical revision. More than 40 years of confrontation and hostility between East and West could be replaced by friendly relations and co-operation. As a result of these processes it seems highly possible that the size of armies and armaments could be cut substantially and that the status and the role of the two military alliances could be changed. There is even a possibility that both the North Atlantic Treaty Organisation (NATO) and the Warsaw Treaty Organisation (WTO) alliances could be dissolved in the future. Hungary welcomes these developments and, as a small Central European country, is particularly interested in peaceful co-operation in every field.

In recent years the Soviet *perestroika* has not been limited to revolutionary domestic changes; it has led also to a strategic re-evaluation of some of their basic principles of foreign policy and military doctrines. The Stalinist concept of class struggle in international relations has been replaced by a recognition of growing interdependence, the tremendous advantages of international economic co-operation, and the urgent need for a common solution to the global problems threatening the world.

In the past few years, several arms-control proposals have been put forward and the concept of “sufficient defence” has emerged as one of the basic military doctrines of the Soviet Union. The new Soviet foreign and military policy was welcomed and supported by most of the Warsaw Treaty countries. In May 1987 the Political Consultative Committee of WTO committed itself to a new defensive military doctrine for the whole alliance. The asymmetries in conventional arms were admitted on the side of WTO and beginning in December 1988 the Soviet Union, Bulgaria, Czechoslovakia, the German Democratic

Republic, Hungary and Poland announced unilateral cuts in that field. This created a better atmosphere and prospects, not only for the Vienna negotiations, but also in other fields.

Hungary has fully supported the Helsinki process from the beginning and has not only maintained but managed to improve its relations with the Western countries, even in the years of a revival of the cold war. This provided a good foundation for rapidly and fully exploiting the possibilities of improvement in international relations from the mid-1980s, and Hungary was one of the first to join the new direction in defence and foreign policy initiated by Mikhail Gorbachev. In January 1989 the Government of Hungary announced unilateral cuts of 9 per cent in forces and armaments for the years 1989 and 1990. The cuts affect 9,300 soldiers. As regards armaments, 250 tanks, 250 artillery pieces and mine-throwers, 9 MiG-21 fighter interceptors, 6 launch pads and 30 armoured personnel carriers will be withdrawn. As a first step, a tank brigade was disbanded in Szabadszallas on 11 August 1989 and another will be transformed into a motorised rifle brigade. In November 1989 a new army reform was announced by the Hungarian Government and further unilateral cuts of 20 to 25 per cent were decided on. As a result of these measures, the number of the Hungarian troops will be decreased from 106,000 to 70,000 by the end of 1991. Compulsory military service will be reduced from 18 to 12 months in 1991.

In parallel with its democratisation process, Hungarian security and defence strategy and policy became subjects of discussion. Besides the Government, the opposition parties are also working out their security and defence concepts. The different political parties agree for the most part that Hungary needs, basically, a "defensive" defence strategy, which also reflects the national security interests, the geopolitical position and the economic capacities of the country, while taking into account the security interests of our allies, particularly the Soviet Union. As Istvan Foldesi, the former adviser to the General Secretary of the Hungarian Socialist Workers Party, puts it:

"In the current international situation, where military priorities are tending to decline due to the balance of power and the enormous financial burden of armaments costs, defence policies are determined by considerations of national security; foreign policy; national economy; and social conditions."

He proposes the adoption of the "defence concept of rational sufficiency", which "wishes to strike a balance between adequate defence requirements for national security and economic capability."

The new military doctrine, approved by the Hungarian Government in November 1989, is built on the principle of “satisfactory and secure defence” and states that “Hungary needs a national defence force which is able to secure the boundaries of the country, to preserve national sovereignty, and to avert a possible external attack”. In order to change to an armed force of a defensive character, it was decided that “the offensive organisation and armaments will be reduced.” It is generally believed that a smaller, but more modern, army with improved armaments and with better trained and paid personnel would better meet our defence requirements.

There are, however, great differences among the parties, particularly concerning the size of the possible cuts and also our status in NATO. According to Karoly Janza, the former deputy chief commander of the Hungarian army, the armed forces can be cut by about 30 to 40 per cent, while our defence capacities can still be qualitatively improved. Some of the opposition parties, however, urge even larger cuts and the reform of NATO is also foreseen. Istvan Kriston, in an independent monthly journal, proposed a three-stage reform of NATO and of the Hungarian defence policy—de-politicisation of NATO; acceptance of military independence of members; and emergence of conflict-averting military cooperation among the “inhabitants of the common European home” some time after 1992—and he visualizes:

“the European countries turning to the military doctrine of minimal defence, which allows only defensive land-based and airborne categories. The armed forces would be frozen at a level which is still sufficient for defence of the borders and maintenance of internal order, but no longer threatens other States.”

As a result of political democratisation and open media in the country, the relations of civilian politics to military affairs have also been greatly changed. Local political forces are becoming active concerning military issues, and a dialogue has opened on several problems. Typical examples are complaints and protests concerning certain inconveniences and damage caused by the military (aircraft noise near the city of Debrecen and some of the holiday resorts on the north shore of Lake Balaton). These issues are widely discussed. There are complaints against the military also for environmental reasons. These were often related to local issues such as the protection of national parks and a wish to reduce army activity in certain regions. The army was receptive to these complaints and, in most cases, immediate measures were taken. The army not only welcomed, but in fact initiated,

discussions about its new military doctrines and in some cases accepted budgetary cuts even though these had a negative effect on its status. The army has been trying to adjust to the new situation for many years, and in order to improve their own financial position, several army units have ventured into entrepreneurial activities (a sort of "internal conversion"). Although about 80 per cent of the officers were members of the Hungarian Socialist Workers Party, the army was among the first institutions to accept the depoliticisation of public services. In fact, it must be stressed – and indeed it was stressed by the army several times – that the armed forces fully support the economic reforms and the political democratisation of the country. In this respect, it was of especial political importance that the delegates of the armed forces to the Congress of the Hungarian Socialist Workers Party felt it necessary to declare in a joint statement early in October 1989 that:

"they are convinced that the armed forces and bodies cannot be used for solving any internal political disputes; they are interested in fulfilling their duties in the framework of a democratic legal State, respecting the constitution, the laws and other public regulations, and accepting the scrutiny of the armed forces to community control and publicity."

The economic difficulties, due to growing structural weaknesses, the shortcomings of planning and management systems and increasing indebtedness, are leading to serious budgetary deficits in many Eastern European countries. Therefore in recent years most of the WTO countries have made either smaller or greater cuts in their military expenditures.

The Hungarian army, as a result of budgetary problems, had to face budgetary restraints as early as 1986. Since then, in fact, the military expenditures of the country have been frozen. Originally, a gradual increase in military expenditures was foreseen in the five-year plan for 1986-1990, but owing to worsening budgetary conditions it was postponed each year. According to army sources, these proposed increases amounted to about 47 billion Hungarian forint, which, as a result of annual revisions, were simply deleted from the budget. Furthermore, owing to cumulative budgetary deficits, the Hungarian Government was compelled to make actual cuts as early as 1989. According to government decisions in the summer of 1989, these cuts will amount to about 5.5 billion forint for the years 1989-1990. For 1990 the parliament approved a budget of 40.4 billion forint for the military, which it is estimated represents about a 30 per cent reduction in real terms as compared with 1989. The Soviet Union announced a 14.2 per cent reduction in military expenditures for 1989 and some other WTO countries have made similar budgetary cuts.

In the circumstances outlined above it seems no exaggeration to state that Hungary is facing probably the greatest conversion of its economy in its peacetime history. This time the question does not arise simply as a result of political proposals or decisions: the call for conversion is based on deep-rooted and fundamental political, social and economic changes in the region and in the international environment. The conversion may be wide-ranging and substantial in size and will probably go on for many years. It will then have wide-ranging effects on society and on the economy and it raises the question of the need for adjustment in government policy, institutions, companies and of course individuals.

It is beyond the purpose of this article to analyse all of the micro and macro-economic aspects of conversion facing Hungary in recent years. From the point of view of government policies I will mention only certain budgetary and employment aspects, and concentrate on some structural (alternative use of capacities or alternative products), marketing, financial and employment problems of Hungarian companies connected with recent cuts. I shall try to draw some conclusions, particularly concerning the need for long-term planning and consistent comprehensive government policies.

Conversion – Budget – Employment

Conversion is a complex process and may be conceived of as an adjustment in different fields. The agents of economic life face new challenges and changing conditions from time to time and they need always to react to them in order to avoid problems and maintain normal and efficient operations. In most cases, this means not only changing policies, but also transforming internal structures and organisation. This organic approach also applies to conversion, and the structural and policy aspects need equal attention.

According to economic theories, whether Marxist or non-Marxist, the reduction or elimination of military expenditures is always taken as a welcome development.

“Military expenditure is an economic burden for a nation’s economy. Such expenditures represent a government allocation of national resources for a military product that flows neither into consumption, which increases the general standard of living, nor into investment, which benefits society’s future productive capacity. Military expenditures are both economically unproductive and socially wasteful. Indeed, military goods and services are unique in that this output leaves the economic cycle almost entirely.

If all United States military equipment purchased and produced in a given year were thrown into the sea it would have no significance either for the standard of living of the American people or for the productive capacity of American industry."

Though Keynes' theory, assuming insufficient aggregate demand, became the basis for government intervention in the economy, it must be noted that, despite references to "military Keynesianism", Keynes personally was not specifically in favour of military spending either.

The uses of resources for other than military expenditures are widely analysed in terms of opportunity costs. The typical approach to budgetary opportunity costs is that, when the costs of a certain number of tanks or submarines are calculated and compared to the number of hospitals or power-plants that could be built with the same amount of money, these productive investments for consumption are often defined as the "peace dividends" of conversion. Of course it is generally recognised that national security and defence are important and indispensable but the relation between the actual military potential and the real national security needs of a given country, as a function basically of political factors, usually remains highly controversial and difficult to identify.

The recent cuts in Hungarian military expenditures were directly enforced by the serious and cumulative deficits in the budget. These deficit- and debt-financing military cuts, however, are considered with some reservation in the conversion literature, particularly because it is assumed that the "peace dividends" of conversion do not accrue in such cases. Of course, the opportunity cost analysis of the cuts can still be applied, but these cuts must be put in special perspectives.

In a difficult economic situation such as that in Hungary, the military spending cuts may be seen as the least bad solution. One of the possibilities other than not touching military expenditures would have been to increase taxes. There is however wide agreement among the experts that owing to the servicing of the country's heavy indebtedness the Hungarian economy is already overtaxed. Therefore a further increase in profit or other corporate taxes could reduce or worsen those investment possibilities, which are desperately needed for the structural and technological modernisation of the economy. A rise in income taxes would have no less negative effects and would contradict the Government's reform philosophy of putting greater emphasis on rewarding individuals and companies for better performance.

Another possibility would have been cuts in health, education or other social services, but this was considered a no less undesirable

option inasmuch as these fields had already been the subject of budgetary freezes and cuts in earlier years. In certain fields further cuts would endanger even the mere functioning of the services (such as the supply of necessary medicine or the operation of schools).

Direct cuts in military expenditures however do not mean equal budgetary savings. In fact, the net savings achieved tend to be much less in many respects, and simplistic calculations often raise controversies and problems. First of all, the State can suffer losses in tax revenues, and because of the relatively high volume and profitability of military production, these reduced tax incomes may be substantial. According to some expert estimates, about 50 to 60 per cent of Hungarian military budgetary cuts may be lost because of these missed tax revenues. Sometimes there are unfounded expectations about the extent of possible direct savings in expenditures. It is however increasingly realised that the costs of conversion are far from negligible, and that a certain part of them must be directly financed from the central budget.

The question of conversion, in physical terms, arises first of all with regard to armaments and equipment used by the military. Some of the equipment and products can be used in civilian sectors and their sale could be a direct contribution to the budget. In other cases, it is difficult to find markets and users for them because they are usually technically outdated and physically outworn. This applies especially to military equipment and armaments, which in most cases have no value for civilian use, and therefore cannot be sold at all or can only be utilised as spare parts or components. Such arms and equipment have to be disassembled and at best sold as junk, and even in that case the cost may far exceed the possible revenue. According to army sources, for example, the cost of disassembling a tank is about 250,000-750,000 forint, which at the present official rate of exchange means about \$US 4,000-12,000, and only after that can they be refounded. For 250 tanks that is already a substantial amount of money. The storage of these products or materials may also be costly and must be covered by the budget.

The conversion of buildings and other military property is also not without problems. Many buildings were designed and built for special military functions and their "conversion" to some other use is either physically impossible or expensive. They require functional rebuilding, and as they are often in very bad condition, they would also require costly restoration. The simplest case is that of apartments, which can be directly transferred to local councils and used to ease otherwise

serious housing problems. The question of reconstruction and renovation arises mostly with regard to military barracks and other buildings which in most cases are beyond the capacities of local councils, to which they are usually transferred.

Sudden budgetary cuts usually lead to difficulties for companies and institutions, and only part of the costs of conversion can be transferred to them. In many respects, they need a new and different form of support (often unforeseen) from the central budget. These costs may arise in connection either with conversion investments or with the retraining of personnel.

The army has often taken different welfare and communal functions upon itself in the areas near which troops are stationed. This was of great benefit to the local community and could ease the budget of the local council. As the President of the City Council of Szabadszallas said at the farewell ceremony for the tank brigade:

“It is impossible not to remember them, because they by their support and presence greatly contributed to the development of our city. They helped us to build water and gas supplies, roads and a culture house.”

This could be conceived of as a sort of “hidden conversion” of certain resources and human effort. On the whole, this type of “conversion” has been marginal, but for the budget of some of the local communities it may be irreplaceable and taken as the cost of military cuts. The military cuts raise conversion problems as regards employment both in the army and in the arms industries.

The first planned cuts of 9 per cent in the army do not seem to cause any substantial danger of unemployment. They affect mainly the conscripts, who can return to their families and their jobs. In the future, fewer people will be drafted. This is a very positive development in both human and economic terms. The possibilities of “conversion” have been long taken into account in the training of officers, and therefore in military colleges and academies so-called “dual diplomas” are issued, acceptable also in civilian professions (as engineers, teachers or economists). In fact, there is a shortage of trained officers in the country, therefore those who want to stay in the army are simply transferred from the units that have been eliminated to others where they are needed. Taking into account the possible future cuts, the number of persons enrolled in military colleges has already been reduced to about half. This makes it possible to improve at the same time the selection and, eventually, the quality of the new students. The new defence

doctrines and strategies envisage new concepts in training and also the need for retraining of the existing army officers. At the same time, a great many officers are near retirement age. For the most part, the structural changes in the army cause only some redistribution of functions, and the overall effects on employment are still marginal. The de-politicisation and de-ideologisation of the army, for example, will mean the elimination of the post of political officers. Recently there have been about 200 of them in the Hungarian army, and according to army sources, they can easily be transferred to other jobs (social, education or welfare). The number of border guards will be reduced by 60 per cent by 1995. This will affect only the recruitment of new guards. Hungary introduced the possibility of "alternative" military service in the summer of 1989. According to army sources more than 600 persons applied for that possibility and most of them will be called for non-military public service. These people will work mainly in social services, which can be conceived of also as a form of "conversion".

Difficulties have arisen so far only with respect to civilian employee's of the army. It is difficult to find jobs for them in nearby areas, and owing to serious housing problems it is almost impossible for them to move elsewhere. If however there is substantial unemployment, the army cuts could have but little effect. According to estimates, the cuts in next year's budget, particularly the elimination of subsidies to some inefficient companies, could cause the loss of about 50,000 jobs. The possible future reduction of military service from 18 to 12 months will in any case increase the supply on the labour market, and may affect the employment situation.

For those employed in weapons industries the problems are different. In view of the present difficulties and "conversions" in companies the jobs of about 5,000 to 6,000 persons are in jeopardy. This number does not, in itself, seem too high, and according to official views, the present central unemployment facilities introduced in 1989 (compensation payments, unemployment benefits and retraining) can cope with their problem. It is not surprising that the press and public opinion are not so optimistic. Changing products implies the need for retraining for employees who remain. Large numbers of highly specialised workers or technicians not only have to be retrained but may suffer a loss in salary and face the difficulty of moving from one place to another. These personal problems can be met only through planned and comprehensive measures. It must be noted, however, that conversion does not necessarily cause unemployment. On the contrary, the transfer

of development and investment resources from the military to the civilian sectors may create more jobs because of the generally higher labour intensity of the latter. The present employment problems are mainly due to deficit financing cuts, and in many cases to a lack of satisfactory conversion and adjustment policies and efforts on the part of specific companies.

Conversion and Companies

There are 10 large Hungarian companies responsible for the bulk of the country's military production and they are the ones most affected by the cuts in military budgets. Contrary to some other WTO countries, Hungary has no closed military industry and the companies are primarily involved in civilian activities. The military cuts have really been felt only since 1988. They became severe in 1989. The first public admission of trouble was given by the general director of Videoton, Janos Kazsmer, in a radio interview in December of 1988. He revealed that his company might suffer a loss of about 2 billion-3 billion forint because of military cuts in 1989. Other companies then voiced similar problems. In fact, the most affected was the Hungarian electronics industry, which was the main supplier of military products, mostly to Soviet markets.

Of course, the companies are not only affected in different ways: they also face different conversion problems. In some cases the products are strictly for military use and the companies have to try to find a completely different kind of production. Some specialised machinery cannot be "converted" to civilian use, and in some cases very expensive machines have to be put out of service. The same may apply to certain materials, which were sometimes stocked in large quantities. Even the shift to similar products requires new developments, reconstruction, and retraining of the labour force. Not only must the capacities and products be "converted", but in parallel, new markets have to be sought and the products have to be sold at profitable prices. The shift may be particularly difficult when a company has to turn from undemanding East European partners to competitive Western markets. In this case, the conversion may be helped by international co-operation or joint-venture agreements with Western firms. Some companies are in fact involved in promising negotiations.

The very different performance of companies indicates that the inventiveness and the flexibility of management are important both in changing to new products and in changing to new markets, and also in solving employment problems. The following examples are illustrative.

Videoton, as one of the leading manufacturing companies of the country, produced for the most part computers and radio equipment for the military, with a great share of its products going to Soviet markets. In 1988 the value of military production was about 7 billion forint, which, according to estimates, will be reduced to about 4.5 billion forint by 1991. Videoton is one of the enterprises most badly affected by military cuts. Besides consumer electronics (colour television sets and radios), in which the company has a long tradition, it is turning to telecommunications (telephone exchanges), and some of the machinery may be used for manufacturing car components, either for prospective Hungarian car assembly plants or for major vehicle manufacturers based in Western Europe. Videoton has already begun to manufacture compact discs in co-operation with Thomson and VCRs with Japanese companies. The company is, however, facing serious financial and employment problems, and of the 7,000 employees in military production, about 3,000 may not be retained. The company was modernised and transformed into a joint stock company, giving substantial managerial autonomy to its 10 independent branches.

PEG, which has been making guns for about a hundred years, managed to maintain normal utilisation of its capacities throughout 1988. It is thought that there will be sufficient demand for this type of product in the future also. On the whole, however, according to the estimates, the company may be forced to cut its military production to one third in the next two years. The company decided to develop and manufacture gas apparatus and it hopes that the products will be marketable in Western Europe. So far no personnel have had to be laid off. The Machine Factory of Godollo is a military company, involved mainly in the production of parts and components and in the repair of military vehicles. The orders from domestic sources dropped by 30 per cent in 1989 and exports shrank even more. In 1990 a further 10 per cent reduction of orders is expected. One of the options for conversion is manufacturing tractors or heavy machinery. Among other things, the company produces mobile army service cars, which can be easily transformed for civilian use on highways or for mobile repair service for agricultural machines in remote places. The company has contacts with Citroen and there are some possibilities of co-operation or participation in assembling ambulances in Hungary. The company has so far managed to avoid laying off any personnel.

In many companies, the conversion problems are complicated by serious financial difficulties. Under the assumption of favourable future

market possibilities between 1982 and 1988, most of the companies in military fields made substantial investments in research and development and in new production capacities. These investments were based on miscalculation of future military needs and were also viewed as compensation for bleak market prospects in civilian fields. The ratio of investment of a company's own resources to the State investment subsidies (credits and also free transfer of government funds) was about 1:2, but a considerable amount of credits was also drawn from commercial banks. The government funds were for the most part extended by the State Development Institute, but some commercial banks also found it attractive to join in giving credit for military developments and investments. Now, with shrinking sales, many companies are facing serious difficulties in servicing these debts. As most of the companies now also need further funds for conversion, the situation is particularly difficult and complicated.

These financial problems are further aggravated by difficulties in the civilian sections of these companies. In fact, along with military production, which was for the most part lucrative, numerous inefficient and unprofitable civilian activities were often maintained. They could be "subsidized" from the high military profits, and the company management often did not care too much about improving them. The secure military markets allowed monopolistic attitudes towards civilian fields and in closed national economies there was no challenge of external competition. Now, with the military cuts, these problems have to be faced and an overall adjustment can hardly be avoided. Owing to similar difficulties in civilian sectors, the problems relating to debt servicing and the need for new development funds arise in many cases and have to be tackled in parallel in both sectors. The negative "symbiosis" of military and civilian sectors has long been pointed out, and several Hungarian economists considered the "militarisation" of some leading companies to be an obstacle to reforms.

Planning and Conversion

It is almost axiomatic that conversion must be based on comprehensive advance planning.

"Despite the fact that persistent, high levels of military spending tend to be fearsomely damaging to any economy, a simple-minded policy of sharply cutting back military expenditures would create considerable economic distress. Not only would the workers who lose their jobs in military industry suffer, but their loss of income would cause a drop in consumer spending that would also generate further job loss in industries

supplying consumer goods. Similarly, reduced purchases of equipment and the like by the military industrial firms whose projects are cut back would generate job loss in producer goods industries. Advanced planning for conversion on a contingency basis can avoid such problems by preparing military-serving facilities and their workforces to move efficiently into productive and profitable civilian-oriented activity."

Professor Seymour Melman of Columbia University is even more specific and categorical in regard to conversion problems in the United States:

"Without a highly decentralised and mandatory two-year planning requirement, conversion to a civilian economy will fail.

In fact, in a message to the United Nations International Conference on the Relationship between Disarmament and Development in 1987, Soviet President Gorbachev proposed that every country should work out a national conversion plan.

In Hungary a conversion policy has emerged and was worked out under the Miklos Nemeth Government in the summer of 1989. The Economic Consultative Council of the Government discussed the possibilities of a conversion programme and made several proposals. On the basis of these proposals, the Government took several decisions and measures, and closer co-operation between the authorities and the companies seems to be developing. The government measures concentrate on the financial difficulties of companies but try strategically to compromise between the defence interests and the economic capacities of the country.

From the point of view of easing financial difficulties, the most important step was that the companies were granted a moratorium for 1989 on repayment of credits drawn from the State Development Institute for military developments and the transfer of some State funds was not excluded. Similar arrangements were suggested with the commercial banks. The export credit schemes promoting hard-currency export can now be extended to these companies. The commercial banks are encouraged to give development credits to these companies, but strictly on commercial grounds. In fact, one of the basic principles of these government measures is that the former special preferences to military projects have to be abolished, and the arrangements have to be similar to those relating to the civilian sectors of the economy.

As a condition of the above-mentioned financial support, the companies are obliged to work out their own development plans. The

companies may join government programmes, and this may help their adjustment. Under certain conditions a part of the cumulated stocks could be transferred to central State reserve funds or sold. Some stocks can be calculated as costs, reducing the tax obligations of the company. The Government decided that the so-called "M" capacities (comprising mainly capacities, units and stocks that are idle in peacetime but which can be mobilised for military use in case of emergency) would have to be revised and reduced, easing the financial burden on companies and on the central budget. In the future the companies will have the possibility of negotiating with foreign (CMEA) partners, and they can contract with them at their own risk. The liberalisation measures on imports are also considered to be helping these companies in their adjustment.

From the experience of recent years, several conclusions may be drawn with regard to the planning of conversion. In fact, the military economy was and continued to be the "most planned" sector of the economy. While in civilian fields as a result of reforms marketing was combined with the transition to indicative planning, classical directive administrative central planning has been maintained almost unchanged in military fields. The military sphere was kept under central control and the five-year planning practice, including also physical targeting, was further applied. The sector worked to a large extent with calculated prices, which in most cases not only covered the costs but also secured high profits. In foreign trade the State monopoly was preserved, the special State foreign trade companies were required to sell and buy these products, and the bilateral balancing of trade was strictly practised. To ensure the supply of raw materials, components and spare parts stocking for two years was built into the plans.

There has been a general belief that unlike conditions in the civilian economy, the classical "planning" models have been successful in military fields. It was also supposed that under directive central planning the conversion was only a technical issue, and this approach dominated also the Marxist conversion literature. According to these assumptions the military production targets are simply replaced by civilian ones that meet the most urgent social needs of the country. The question how the plan can cope with the changed material and labour inputs was seen only as a technical issue.

The experience of recent years, however, contradicts these assumptions. The false motivation of bureaucracies is no less detrimental in the military fields and the system has proved to be too rigid to meet

sudden changes. The prices and profits actually guaranteed and the monopolistic market position of companies make them insensitive to efficiency and innovation. In the light of the recent stock-minimising policies of leading Western companies, the two-year stocking practice can be seen as nothing other than a built-in scheme for wasting resources in the system.

There is broad agreement that more market-oriented planning is needed also in the military sectors, and as recent measures show, these companies are supposed to be operating much more on a commercial basis. The importance of the time factor in conversion planning must also be stressed. In fact, some companies have recently been complaining— quite rightly— that as a result of sudden budgetary cuts, they received only two months' advance notice about the postponement of some long-planned contracts. This is, of course, beyond any reasonable possibility of adjustment. The time-factor has to be taken into account particularly in the case of long-term developments and new investments. The close co-ordination of interests and co-operation between the partners are also of the utmost importance. In recent years the companies and the Government have been blaming each other and this has proved to be counter-productive and of no benefit to either side.

It has been pointed out that behind the "iron curtain" of excessive military secrecy there have been good opportunities for lobbying and sometimes even the economic policy-makers have had no clear picture of the real situation. Secrets have to be guarded in the national interest, but effective democratic parliamentary control over military budgets and industries is widely considered to be desirable. In the coming years, Hungary faces the difficult and complex tasks of completing fundamental reforms and consolidating a debt-burdened economy. A comprehensive programme of further conversions can contribute greatly to the solution of these problems.

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THE NATIONAL EXPERIENCE OF THE USSR

Introduction

For the Soviet Union, the beginning of the modern stage of economic conversion has a precise date: 7 December 1988. On that day Mikhail Gorbachev, while addressing the United Nations General Assembly in New York, called for the radical demilitarisation of the world economy and announced that the USSR was going to start a unilateral conversion of its military economic base. Subsequently, in January of 1989, the Soviet Government announced a dramatic unilateral reduction in the size of the Soviet military budget and military production: in two years (1989-1990) by 14 per cent and 19.5 per cent, respectively. At the same time the Soviet Union continued its efforts in the area of disarmament that led to the conclusion of important Soviet-United States treaties in nuclear and chemical weapons and opened the way for a radical reduction of conventional armed forces in Europe and in Asia. All of that, of course, has prepared the ground for the large-scale reallocation of resources from the military to the civilian economy in the USSR.

The prospects of a demilitarisation of the Soviet economy have been a welcome development for the overwhelming majority of the Soviet people, but the task of translating these successes into practical economic benefits has turned out to be much more difficult than expected. Contrary to expectations, the centrally planned Soviet economy has proved to be not very well prepared for the efficient large-scale conversion of the military economy. Two years of conversion experience have created numerous problems of a technical, economic and social nature.

Soviet military conversion is not without precedent. There were sizeable cuts in the army and in military spending in the 1920s, in the

1940s, after World War II, and in the late 1950s and early 1960s. In all these cases, conversion of military production to civilian use gave an additional boost to the economy and helped raise people's living standards. The times, however, have changed, and the current conversion, implemented against a backdrop of economic crisis and radical reform, can hardly draw on the recipes of thirty to fifty years ago.

The purpose of this paper is to present a critical account of the experience of the USSR in the area of conversion, reflecting both its achievements and failures. The author strongly believes that *glasnost* in conversion activities is not only helpful in terms of facilitating proper understanding of that process by the international community, but is also one of the most important prerequisites for the success of conversion itself.

The paper is divided into three parts. The first part offers a brief presentation of the scale and nature of the Soviet military economy. The second part describes the Soviet conversion experience from a historical perspective. The third part analyses the major obstacles in the way of conversion in the USSR and the means that Soviet enterprises, local authorities, Government and public organisations use to overcome them.

The Soviet Military Economy: Is it Ready for Conversion?

The Size of the Soviet Military Economy

The use of the forces and resources of the modern military complex to help the civilian sector has paramount significance for the Soviet Union. Unlike the case of Western countries, where the defence industry plays a relatively modest role, in the Soviet economy the military complex holds pride of place, consuming the lion's share of its best manpower and material, and scientific, technological and financial resources. While military spending accounts for less than 6 per cent of the gross national product (GNP) in the United States, 3 per cent in the Federal Republic of Germany, and 1 per cent in Japan, its share in the USSR is officially 8 per cent. Soviet officials admit that up to 40 per cent of machine-building output and 75 per cent of research and development are defence-related.

The official Soviet budget puts the figure of military expenditures for the current year at 70.9 billion roubles, or 8.2 per cent less than in 1989. The breakdown of that figure is shown in the table 1.

TABLE 1
Soviet Military Budget in 1990

	<i>Expenditures in billions of roubles</i>	%
Total expenditures	70.9	100.0
Procurement of military hardware	31.0	43.7
Military research and development	13.2	18.6
Personnel	6.8	9.6
Supply and maintenance	12.2	17.2
Military construction	3.7	5.2
Pensions	2.4	3.4
Other	1.6	2.3

Source: *Krasnaya Zvezda*, 1 February 1990.

Official figures on the Soviet military budget, however, are criticised by many foreign and Soviet experts for being artificially low. Recently the group of experts working for the Committee on Science and Education of the Supreme Soviet of the USSR came up with a far higher estimate of Soviet defence spending. In their opinion, shared by the respected scientist heading that Committee, Academician Yuri Ryzhov, the total amount of Soviet defence spending is close to 200 billion roubles, or more than 20 per cent of the GNP. Such a gap between the official and the unofficial estimates of the military budget indicates, among other things, a poor state of accounting and an unrealistic pricing in both the military and civilian sectors of the Soviet economy.

Unfortunately, the level of *glasnost* in matters pertaining to the Soviet military economy is still very far from adequate. At the moment neither the number nor the location of the majority of military enterprises is known to the public. Ironically, Soviet students of the subject still have to rely on Western estimates. According to these estimates, the number of military enterprises and research institutions in the USSR is over 5,000, while the number of workers, scientists and engineers employed in the military economy is between 4 and 7 million.

While the exact location of the majority of the military economy establishments is still kept secret, it is reported that most of them are on the territory of the Russian Republic and the Ukraine, with the largest clusters in such regions as the Urals and in such cities as Moscow, Leningrad, Gorky, Novosibirsk, Sverdlovsk, Chelyabinsk and Tula. The former mayor of Moscow, Lev Zaikov, admitted last year that more

than one third of Moscow's industrial output and more than one half of its research and development efforts were devoted to military ends.

The main goal of the Soviet military industry in the post-war period was to achieve strategic parity. The Soviet Union reached this target in the early 1970s, and even outstripped the West in some fields after that. In 1988, for example, the USSR manufactured three times as many tanks and twice as many missiles as all the NATO countries combined. Hundreds of Soviet military and space enterprises produce high-quality and reliable equipment today, and many types of production, such as helicopter gunships, MIG-29 and SU-27 planes, and firearms, are as good as anything manufactured anywhere in the world.

The ability of the Soviet military-industrial complex to perform its direct task is not in doubt. The ability of these same military-production facilities to become useful for civilian production, however, is quite another matter.

The Nature of the Soviet Military Economy

To understand the functioning of the Soviet military industry, one has to realise first of all that it is a part of an economy that is centrally planned and government-owned. It has some specific features, e.g., dominance of bureaucratic controls, lack of competition, disregard for costs and lack of flexibility in manoeuvring its capital, labour, technology and other Resources.

The resource allocation in the military economy is operated from above, with suppliers for every factory fixed by the corresponding ministry. At the very top, the Soviet military industry is controlled by the Military-Industrial Commission, headed by the deputy prime minister. The Commission oversees the operation of all defence-related ministries, which, in turn, give orders to hundreds of enterprises and research institutions under their command.

Until real conversion began in 1989, some Soviet economists had expressed hopes that the planned nature of the Soviet economy would be an advantage in fulfilling the task of implementing a massive reallocation of resources from military to civilian uses. They argued that since the Soviet economy was a planned one, its military sector could be easily redirected to civilian production. This would be done all the more easily, they said, because a large portion of the output of military factories (about 40 per cent) was meant for civilian purposes. Also, as there was a constant shortage of workers in the Soviet Union, there would be no problem in providing jobs for the displaced military-industrial workers.

Theoretically it is of course true that a centralised economic system is better equipped for the implementation of large-scale economic programmes. (The historic experience of wartime economic mobilisation in the Soviet Union is just one example of such a programme.) In the case of the transformation of the modern military economy, however, the planned economy does not seem to work better than its market counterpart.

There are three basic reasons for that. First, the Soviet military economy today is a much more complicated and sophisticated organism than it was in the days of World War II. Thus converting it to civilian ends is a much more complicated task, demanding more precise instruments than a simple administrative decree. Secondly, in contrast to the military industries of the West, which usually interact actively with their civilian counterparts, most Soviet military enterprises are still barred from the rest of the economy by excessively high barriers of secrecy. In the past that internal iron curtain prevented the full realisation of the "spin-off effect of military technology. Now it stands as a major obstacle to the conversion of the military industry.

Finally, the task of converting the Soviet military economy to civilian ends is made more difficult by the sheer size of military production and research. On the macro-economic level, the USSR is spending a share of its GNP on defence two to five times larger than that of other industrialised countries. On the micro-economic level, that translates into a situation where many more individual enterprises depend totally or almost totally on military orders and thus do not have proper experience in the civilian markets. (In contrast to that, most military contractors in the United States and other Western countries use 5 per cent to 15 per cent of their capacities to meet military orders and are thus able to sustain cuts in defence orders with much less of a shock.)

All in all it would be fair to say that the heavy dependence of Soviet military producers on defence orders, the overcentralised nature of their operations and their relative isolation from the rest of the economy make the task of conversion in the Soviet Union more difficult than in the market economies of the West.

Soviet Experience in Conversion: Conflicting Results

Conversion in Earlier Periods

In the course of its history, the Soviet Union has known four periods of conversion. Two of them came as a result of the conclusion of major wars and two others, including the present one, occurred in peacetime.

The first period resulted from the massive demobilisation of armed forces after the civil war of 1918-1920. From 1920 to 1924, the Red Army was reduced to one tenth of its former size: from 5.5 million to 562 thousand. The massive influx of able-bodied young men into the labour market helped the post-war revival of the economy and contributed to the success of the market-oriented "New Economic Policy" declared by Lenin. Conversion of the military enterprises did not present a major problem: at that time defence industries produced relatively primitive armaments and, moreover, did not constitute the dominant part of the country's economy.

The second period of conversion took place upon the conclusion of World War II and continued until the end of the 1940s. The decision to start conversion was taken by the Soviet leadership headed by Stalin during the final stages of the war. Conversion was accomplished relatively smoothly, largely due to the fact that for most factories conversion meant the return to their original production. During the war many Soviet civilian factories had been transformed and re-equipped to produce armaments. Thus for them a return to civilian production actually was a reconversion.

The economic conversion of the late 1940s coincided with massive demobilisation of the armed forces. Between May 1945 and December 1947, the Soviet Army was reduced from 11,365,000 to 2,874,000 servicemen, that is, by 8.5 million. The human side of conversion was not handled as well as the economic side. The state did not provide adequate facilities for the retraining and relocation of the millions of servicemen coming back from the war, many of whom had been drafted into the Army at a young age and did not have any profession. That led to such negative consequences as a rise in the number of those temporarily unemployed and a rise in crime.

The third conversion (the first in peacetime) was started in the late 1950s at the initiative of Nikita Khrushchev and continued till 1963-1964. Khrushchev's conversion involved the demobilisation of more than 2 million servicemen as well as the reduction of the Soviet military budget and the scrapping of certain types of military hardware (such as navy ships).

The saving in military expenditures was directed to the civilian economy and helped to raise the living standard of the population. In the period of 1958-1965 these savings contributed to doubling the level of pensions and the volume of residential construction. (The latter was

achieved after more than 100 new prefabricated-housing factories had been put into operation across the country.)

However, Khrushchev's conversion was accomplished in a command, bureaucratic way, with no due planning or consideration of its social consequences. For example, many military officers were thrown out of the Army without prior notification, in some instances a few months before retirement. There was also no comprehensive retraining system for the discharged officers.

The Gorbachev Conversion: First Achievements

The timing for the latest breakthroughs in disarmament could not be better for the Soviet economy, which has inherited from the Brezhnev era an array of deep problems and a need for new resources for development. Conversion of the huge Soviet military-industrial potential seemed to be a logical answer to such problems as underinvestment in housing, health services, education and ecology, obsolete capital stock in industry, backwardness in agriculture, inadequate pensions for the elderly, etc., not to mention the Soviet budget deficit, which, at 11 per cent of the GNP (1989), stood much higher than that of most industrialised countries.

At first glance, quite a lot has been accomplished during the first one and a half years of conversion. Priority has been given to reducing the military budget. In 1989-1990, it is being reduced by more than 10 billion roubles, and the savings for the 1990-1995 period are to total 30 billion roubles. The stated goal is to reduce by 1995 the share of the military expenditures in the GNP by 50-100 per cent.

Conversion has reportedly been started in more than 420 enterprises and in 200 research institutes and design bureaus belonging to the defence industries. In 1990 alone, more than 500,000 people in the defence sector will begin to work for civilian production. Interestingly enough, some military enterprises have not just stepped up their civilian production, but have also taken over the least efficient civilian factories under their control in the hope of making them more efficient. Thus in 1989 all enterprises belonging to the ministry dealing with food processing equipment were brought under the control of one of the ministries dealing with defence.

Conversion is not limited to the military industries alone. The military must also join in the conversion efforts. Thus, decommissioned hardware and stocks which can be used for civilian purposes are being sold by

military depots. It has been reported that stocks of military supplies and dual-use equipment totalling 365 million roubles were sold in 1989, e.g., automobiles, small ships, radio equipment and fuel.

The Air Force has established a special permanent service which has taken charge of the transportation of civilian loads on military planes. In 1989 alone, about 45,000 tons of such loads were carried by the Air Force. In the mean time the Soviet Navy has established a special department responsible for selling out-of-service navy ships to domestic and foreign buyers. In 1989, 17 old submarines and a cruiser were sold by this department to a foreign company as scrap metal. The Defence Ministry is also turning over to agriculture some of the 42 million hectares of land (about 2 per cent of the territory of the USSR) that it controls at the moment. Finally, in co-operation with the State Committee for Labour, the Ministry of Defence is establishing a retraining programme for military personnel being discharged from service in the wake of the decision to reduce Soviet armed forces by 500,000 in two years.

In February 1990, Gosplan, the State Planning Committee, presented to the Council of Ministers a programme for converting the defence industry over the period 1991-1995. It provides for a sharp increase in civilian production in military facilities, such as the ministries dealing with general and medium-scale machine-building, defence, shipbuilding, electronics, and the radio and aviation industries. Each ministry is assigned one of the twelve priority areas of military-civilian conversion: consumer durables; farm machinery; equipment for light industry and food processing; trade and public catering; medical technology; electronics; computers; communications, TV and radio broadcasting; civilian ships; civilian aircraft; space technology for peaceful purposes; and new materials and technology. When the conversion programme is completed, the share of civilian goods in the total output of the defence industries should rise from the current 43-45 per cent to 60-65 per cent. The volume of civilian production should increase from 30 billion roubles in 1990 to 70 billion in 1995.

Although these plans are extensive, they have yet to bear fruit. In reality, the preliminary results of conversion show that the implementation of various conversion initiatives is falling far behind plan. By the end of 1989, out of a planned 120 new types of civilian goods, the defence industries have managed to start producing just 23, and only 15 per cent of the new products meet international quality standards. The factories that are converting are experiencing great

difficulties both in finding supplies for their new lines of production and in creating adequate technology at acceptable costs. Because civilian products are less profitable than military products, converting factories are suffering losses and often have to be rescued by the injection of subsidies. The worsening economic situation in the defence sector is forcing thousands of highly trained workers, engineers and research scientists to quit. They are looking for the better-paid jobs in the newly opening market segments of the economy, especially in co-operatives and joint ventures. Thus, in many ways the conversion process that was meant initially to help pull the Soviet economy out of the crisis is now facing a crisis of its own.

Conversion in Times of Economic Reform: Obstacles and Solutions

Major Obstacles

The massive reallocation of resources from military to civilian uses in the period of transition from a centrally planned to a market economy could not be an easy task, especially when the situation is further complicated by a deep economic and social crisis. Still, even under these conditions conversion could be accomplished more efficiently, provided it were planned more carefully and adjusted in due manner to the changing structure of the Soviet economy.

Unfortunately the decision to start conversion was not preceded by serious preparations. It came as a surprise to many military-production facilities, which often learned about the reduction or cancellation of large military orders only three to six months before production was to begin. Orders for civilian goods, passed down from above, often became a headache for the managers of defence plants. Since no well-considered plan for conversion had been drafted, these orders were often unmatched by funds and raw materials, and took little account of the technical possibilities of the enterprise involved. Although the use of defence resources to shore up the consumer-goods sector or the agro-industrial complex is a good idea in principle, in practice it has sometimes taken absurd forms. For example, instead of concentrating on producing and designing badly needed passenger planes, some factories in the military aviation industry have to force their specialists in aerodynamics, fuselage and chassis production to design machinery for canning tomatoes or processing pasta.

The State Conversion Programme is meant to correct some of the more evident flaws in the process of conversion, but many observers doubt that in the rapidly changing economic situation it will be a

reliable instrument of planning. Moreover, the programme is still to be approved by the Government and has not, as of late 1990, been officially put into effect.

However, the main problem with conversion is not so much the ill-conceived plans as a lack of incentives for military facilities to change. Without a wholesale market for business goods, with a rigid state order system, and with the disadvantage of primitive business information, even civilian enterprises do not have room to manoeuvre for resources. In the military economy, the traditional veil of secrecy is another obstacle, forcing potential business partners to look for each other blindfolded.

The position of defence enterprises is made worse by the fact that prices and cost-effectiveness in the civilian world are, as a rule, much lower than in the military complex. Under these circumstances, in order to keep their former level of wages and to find the funds for conversion, factories must either cut their labour force or ask for aid from the state budget. In 1989 the Government earmarked 240 million roubles, and in 1990 it allocated 350 million roubles to maintain the level of salaries in the defence industries.

Struggling with the Conversion Crisis

Under the triple pressure of cuts in defence orders, the economic crisis, and the advancement of market reforms, Soviet military manufacturers are increasingly forced to overcome obstacles to conversion by themselves. Having seen that hopes of "sitting out the conversion" or accomplishing it at the expense of the State are not going to materialize, they are looking for new partners and potential consumers in the USSR and abroad. Recently several "self-help" regional inter-ministry associations were set up among military-production facilities in Moscow, Leningrad, Kiev, Novosibirsk and Sverdlovsk with the assistance of the local governments. These associations are forming their own data banks, seeking customers and partners, and working out ways to cut costs and raise the quality of their civilian outputs.

The latter concern is especially important because, so far, the quality of the defence industry's civilian products is much inferior to its military output. The reasons are obvious: the manufacture of goods for the civilian market is usually unwelcome in defence establishments and is allotted a minimum amount of technological, material and financial support. On the other hand, the enormous overhead costs of military production, which are automatically deflected onto the civilian side, effectively price the goods out of the market.

Some Soviet economists and managers believe that the strategic solution of most conversion dilemmas is to let all civilian facilities of the defence complex branch out into independent corporations. The idea of creating self-financed subsidiaries, independent of military-production facilities in terms of organisation and finance, is getting increasing support inside military industries. Some suggest that these enterprises should be turned into joint-stock and co-operative businesses, with the aim of encouraging initiative and providing higher incentives for the workers. If such proposals are backed by the Government, those enterprises undergoing conversion can become a real testing-ground for economic reform.

Of particular importance are the international economic implications of conversion. The USSR is one of the largest arms exporters in the world. In 1989 its exports by Western estimates amounted to \$11.6 billion. Taking into account the fact that the Soviet defence industries used to ship abroad about one quarter of their output, it is hard to underestimate the role of that factor in the future of the Soviet military economy.

Some in the USSR argue that, instead of reducing military production, conversion should build on the relative competitive strength of the Soviet arms industry and step up exports. This line of argument, however, ignores not just the moral and political effects of such a solution, but also the fact that most of the USSR's customers in the world arms market never paid for supplies in hard currency and the market itself has been constantly shrinking in recent years.

The alternative approach calls for the realisation of the military industries' export potential in civilian markets. Theoretically conversion offers a wide scope for exports. But, so far, successful examples have been few and far between. They include a Soviet-West German joint venture in Odessa, turning SS-20 missile carriers into mobile cranes; several projects in space exploration; and a joint United States-Soviet venture to manufacture sporting and "executive-class" aircraft, involving the Sukhoi design bureau and some other projects. But this is not much for the world's largest military-industrial complex.

Because of their relative technological backwardness and high costs, most Soviet enterprises under conversion are unlikely to be able to deal on the foreign market in the near future. But they can already find partners for some projects, such as making helicopters and aircraft, shipbuilding—including sports yachts and launches—selling space-

launch capacities and conducting space research for foreign firms. They can also rent out military planes for international routes. Selling military hardware and components on the world market for scrap or for refitting for civilian applications also holds out some promise. Suffice it to say that, once the arms reductions in Europe are implemented, many thousands of Soviet tanks, armoured vehicles and artillery pieces will become redundant.

The problems of conversion are far from being limited to the technical and economic difficulties listed above. The switch over from military to civilian production, which is a complex and multi-faceted process affecting the interests of millions of people and a large number of social institutions, inevitably confronts Soviet society with serious political and ideological problems. It is exactly here that an educated public can play a helpful role. It must be admitted, though, that until recently one could not find the ideas and principles of conversion discussed even in scientific literature. As a result, the level of public awareness of the problems and of the prospects of conversion is still quite low. The situation started to improve only in the course of the last two years. More and more people in all walks of life are becoming interested in conversion. In the course of 1989 two public commissions on conversion were founded: one under the auspices of the Soviet Peace Committee and the other—the National Commission for the Promotion of Conversion—through the initiative of trade unions and the Academy of Sciences. The Commissions, which include representatives of the military, Government, trade unions, the academic community and business, devote their efforts to the exploration and publicising of the conversion agenda. More recently, another organisation—the International Conversion Fund—was founded by several Soviet and foreign organisations with the aim of promoting conversion at both economic and public-policy levels.

Conclusion

The defence industry is by far the best that the Soviet system of a planned economy has created over the past 50 years. It has huge potential, but putting it to peaceful uses poses a formidable task. In the past (after the Second World War and in the late 1950s and early 1960s), conversion in the USSR planned economy was facilitated by the relative simplicity of the industrial structure and technology. Under such conditions, centrally administered economic adjustment worked more or less successfully.

At the present stage of much more complex economic structures and more sophisticated and specialised military technologies, Soviet central planning seems to be unable to cope with a similar task. It is especially difficult because conversion is taking place at a time of painful transformation of the Soviet economic system, further complicated by the deep economic crisis.

The old-style command methods manifest their flaws in their inability to adjust conversion plans properly to the technological and labour characteristics of the defence enterprises and to provide them with the necessary incentives for the production of civilian goods. These defects are already taking a toll in the defence industry in the form of the growing exodus of its highest cadres to other sectors of the economy. Hence the crisis of the command-type conversion.

In the mean time an alternative type of conversion is taking shape. It is represented by the efforts of the individual enterprises, sometimes assisted by the local authorities, to take the matters of conversion into their own hands by loosening ties with the central ministries, creating "self-help" horizontal associations, and developing direct market-based relationships with their potential clients and partners, including international ones.

In the final analysis, the question of whether or not conversion makes a valuable contribution to *perestroika* depends on how well it will be integrated into the process of the radical transformation of the Soviet economy.

CONVERSION CONCEPTS AND APPROACHES

For many years, conversion from military to civilian production was considered to be a problem for the future, not the present. As a consequence, much of the writing about the problem was theoretical and abstract, while much of the political discussion was rhetorical. When major conversion issues did arise—as they did most dramatically in several countries at the end of the Second World War or after the cancellation of a particular arms project—they were often handled (sometimes quite successfully) in an *ad hoc* manner, with little reference to general theoretical writings.

In the early 1990s, the situation is different. Disarmament is no longer a distant vision, safely confined to a Utopian future, but a reality. The disarmament which has taken place in the period since 1986 is, however, neither complete (covering all types of armaments) nor general

(applying to all countries); it thus differs sharply from some visions of a world beating its swords into ploughshares.

The problems thrown up by the actual measures of disarmament of the late 1980s and those envisaged for the 1990s are in important respects different in character from what was envisaged in some past considerations of conversion. In particular, four main problems stand out:

1. In the Soviet Union and in other States which are parties to the Warsaw Treaty, the question of conversion is inseparably linked to the larger and more complex one of conversion from a command economy to an economy which allows much greater scope for market forces.
2. In the Western world, the question of conversion seems likely to arise most sharply in certain countries (particularly the United States and the United Kingdom) which have traditionally devoted a relatively high percentage of their gross national product (GNP) to defence, and which also have a record of comparatively sluggish growth in the post-1945 period compared to some of their economic rivals.
3. Measures of arms control and disarmament often affect high-technology products of a very distinctive and identifiable type: ballistic missiles, fighter and bomber aircraft, tanks, military helicopters and the like. Yet in the past decades there has been a strong tendency for the technology in such products to diverge sharply from that in related civilian products. To the extent that this is the case, conversion becomes more difficult.
4. Disarmament can be very expensive—with respect to both verification and the actual disposal of weapons— and the possibility of benefits going to civilians and civilian purposes may therefore be less than was at one time hoped.

Against a background of dramatic change, including in the field of disarmament, I will look at some of the international political aspects of the conversion problem and the possible extent of disarmament in the 1990s. Accordingly, I will discuss: past treatment of conversion as part of general and complete disarmament; recent measures of arms control and disarmament (whether by agreement or by unilateral decision); possible further measures of arms control and disarmament; and problems of international security and conversion in the 1990s.

Past Treatment of Conversion as Part of General and Complete Disarmament

Conversion has attracted much attention in the past from academic writers and also from those in political circles. A rich body of thought on a very broad topic cannot all be forced into a single conceptual box: it would be quite wrong to suggest, for example, that all writing on conversion belongs to a single school.

Yet in much of the past literature on the subject there is, in one form or another, an explicit or implicit message:

- Disarmament is a desirable goal in its own right;
- The alternative to the arms race is disarmament of a very sweeping kind;
- Inasmuch as the imagined difficulties of conversion may be used as arguments against disarmament, they need to be refuted in advance through studies and pilot schemes;
- Wasted expenditure on military weaponry should be replaced with sensible expenditure on food, schools, hospitals, and civilian production generally.

Just one example must suffice here to illustrate the context in which much of the discussion of conversion has occurred. Seymour Melman, one of the most distinguished writers in this field, wrote a paper in April 1980 beginning with the words:

“In the event of a political decision to freeze or reverse the arms race, what could be done with the large and specialised military economies, with their sophisticated equipment and people? That question raises the conversion problem.

“How able are the major countries to redirect their industrial resources from military to civilian service?”

Melman said in the concluding section of that paper:

“With respect to economic conversion, the similarities among the countries examined far outweigh the differences. Whatever the national differences of size, wealth, culture, geography, history, power, social and economic structure, the governing establishments of the US, UK, West Germany, USSR, Egypt, India and Israel share the common ground of having no contingency plans for economic conversion of their military economies....”

“During the great armaments build-up that has followed World War II, the disposition of military economy, hence the conversion problem, has been the item omitted from the agenda of every meeting among states to consider the arms race in any respect. Therefore even a beginning of

conversion capability within the nation-states will be a start toward reversing the arms race among the states.”

A similar approach to the conversion problem was evident in some of the contributions to the two special issues of the *Bulletin of Peace Proposals* on the subject in 1988. These issues were themselves evidence of the growing salience of the subject of conversion.

In 1990, no one can say that the conversion issue has been, as Melman said in 1980, “omitted from every meeting among states to consider the arms race in any respect”. The subject has been raised at numerous conferences in 1989 and 1990. It has also been raised at the highest diplomatic levels. It has been the subject of a number of international agreements; and it was discussed during President Gorbachev’s summit visit to the United States in May 1990.

However, the subject presents itself today in a very different way from that envisaged ten years ago by Melman and that envisaged in much of the literature on the subject. First, despite the vast changes in international relations in the past few years, it is not yet possible to state that there has been “a political decision to freeze or reverse the arms race”, or a decision “by the major countries to redirect their industrial resources from military to civilian service”. The decisions that have been made in many countries do not yet go quite as far as that. What there has indisputably been is a political decision in the USSR to reduce that country’s exceptionally high defence expenditure, and a concomitant decision in the United States to undertake conversion to some degree. A number of other countries, allied to these two Powers, are also taking part in such changes.

Secondly, although there have been decisions to reduce high defence expenditure, they have not been taken by, or do not apply to, all countries. It is not yet clear that Egypt, India and Israel (to name three of the countries considered by Melman in 1980) are likely to take part in, or benefit from, the processes of disarmament and conversion taking place in other countries in the 1990s.

Thirdly, such redirection of industrial resources from military to civilian service as is taking place is occurring (especially in the USSR) in an environment of major and inevitably disruptive economic change, in which the whole idea of the centrally planned economy is being called into question.

Finally, it remains to be seen whether such conversion as occurs is towards purposes which will be generally seen as “civilian” in character.

The definition of “civilian” is not simple in the field of conversion, just as it is notoriously complex in the field of the laws of war. There is always the possibility, or risk, that conversion may be directed towards large State projects which have certain quasi-military characteristics, even if they are not for military purposes. Space exploration is only one possible example.

Melman’s pioneering work in the field of conversion reflects a long tradition of viewing all military expenditure as in some way wasteful and unproductive. Adam Smith, writing after the wars of 1756-1763 between England and France, stated that “great fleets and armies” were clear examples of “unproductive labour”. Over two centuries later, both the Brandt and Palme reports reflect this view, arguing that high military expenditure has failed to provide security, and that major conversion from military to civilian production is possible and desirable.

The basic proposition that military expenditure is inherently wasteful is no doubt often well founded and perfectly justified. However, much of the tradition of thought associated with this proposition is questionable. The conclusions often drawn from it are that disarmament of a sweeping kind is the solution to the armaments problem and that money and resources saved through disarmament can and will be put to nobler causes, including the development of the third world.

These conclusions are questionable. In particular, there is a need for examination of disarmament and conversion to be related much more closely than hitherto to examination of arms control and limitation. For all its weaknesses (and they are many), the arms control school of thought has assisted greatly in getting initiatives of arms reductions taken seriously, as practical possibilities, rather than being dismissed as rhetorical proposals.

Arms control or limitation is distinct from general and complete disarmament in a number of ways. It is not just that it involves more limited measures (though these can include measures of actual disarmament), but also that the underlying philosophy is different. Arms control tends to be advocated not as a value in its own right, but rather as a means to an end. The goals here are twofold: security at lower cost, where possible, but also security in the sense of military systems which will not lead to instability in a crisis—and such systems may be very expensive. The arms control approach may even at times suggest the need for some States to increase certain categories of armament.

The arms control school has powerfully criticised the whole idea of general and complete disarmament. It has drawn a sharp distinction between measures to control or reduce armaments (“arms control”), and more sweeping ideas about all-round disarmament. In particular, the idea of general and complete disarmament has been criticised on the following grounds:

- Difficulty of getting all countries to agree to disarm at the same time;
- Problems in verifying the numbers or absence of certain types of weapon;
- Uncertainties as to how to manage any serious problems which may arise concerning violations of major provisions of a disarmament agreement;
- The continuing likely need of States for certain types of armaments to deal with both external and internal challenges of various kinds, and to deter possible use of force by States or non-state entities;
- The basic improbability that the future of human history will be so totally different from the past.

Some advocacy of conversion has appeared to ignore this range of difficulties associated with general and complete disarmament. Indeed, in conversion literature there has sometimes been an assumption, implicit or explicit, that the main obstacles to disarmament are economic: the vested interests of military industry or the difficulty of converting that industry to civilian production. Show how such obstacles can be overcome, and then disarmament can be achieved!

The full range of criticisms of general and complete disarmament needs to be taken into account much more fully than it has been in the past in the discussion on disarmament and on conversion. The criticisms suggest the need for an approach to conversion which accepts that what is at issue is the substantial reduction of military industries, not their complete abolition; which appreciates that verification of disarmament and of continuing levels of armament is a difficult and expensive business; and which takes fully into account the risks inherent in a situation where certain demands for armaments may decline, but others may still exist or even increase.

If the idea of general and complete disarmament (at least as it is normally presented) has its faults, so undoubtedly does the idea of arms control. If the one is excessively Utopian, underestimating or

ignoring the real importance of the factor of force in human affairs, the other is open to the no less damaging criticism that it is merely reformist – altering but not fundamentally changing the international system.

Considered historically, the relationship between general and complete disarmament on the one hand, and arms control on the other, has had a dialectical character. In the 1920s and 1930s, dissatisfaction with the League of Nations consideration of a variety of measures of arms limitation encouraged the Soviet Union, through Maxim Litvinov, to advocate complete and general disarmament. After the Second World War, and especially in the early 1960s, the inherent improbability of general and complete disarmament, coupled with the failure of negotiations to make real progress towards that end, led to a revival of interest in more modest measures of arms control and limitation. In recent years, there has been much evidence of dissatisfaction with mere arms control and a revival of interest in broader schemes for disarmament.

This revival of interest in general and complete disarmament has been especially evident in the United Nations. General Assembly resolution 1378 (XIV) of 1959 stated explicitly for the first time that “general and complete disarmament under effective international control” was the goal of United Nations disarmament efforts. This took the United Nations beyond the rather cautious words of the Charter on the subject of disarmament. The commitment to general and complete disarmament was a notable feature of the three United Nations special sessions on disarmament, held in 1978, 1982 and 1988.

In the United Nations, much of the discussion of the conversion problem has taken place within a framework of proposals for general and complete disarmament. This was true of the first United Nations major report in the field, in 1962. The 1989 Bulgarian resolution, adopted by the General Assembly, appears under the heading “General and complete disarmament”, and opens by stating “that many States wish to convert their military resources to civilian purposes.”

This is not to criticise such efforts under United Nations auspices. They have been very valuable in drawing attention to the great opportunities presented by conversion, and they have compelled States to consider the whole issue. The 1989 Bulgarian resolution, mentioned above, lays great emphasis on studies of the conversion process and it leaves the subject of conversion firmly on the United Nations agenda, not least through the penultimate paragraph, by which the General

Assembly invited Member States to submit to the Secretary-General by 30 April 1991 their views concerning various aspects of the conversion of military resources to civilian purposes.

However, it must be faced that the kind of disarmament now occurring and likely to occur is very different from general and complete disarmament; and a good deal of it has taken place largely outside the United Nations framework—through negotiations within a single State, or on a bilateral or regional basis. In other words, the context of conversion is rather different from what was implied in many past United Nations documents.

Recent Measures of Arms Control and Disarmament

Arms control and disarmament are not new. In some forms, they have always been part of international relations; in the period since the early 1960s (roughly speaking, the period in which both the United States and the USSR have possessed large nuclear arsenals and complex delivery systems), there has been an impressive range of East-West arms control accords.

The historical record, especially that of the twentieth century, suggests that measures of arms control and limitation are more likely to affect some types of weaponry than others. Up to now, for example, there has been only limited success in controlling manufacture and possession of a wide range of conventional armaments. The kinds of weapons and weapons tests which appear most amenable to control are the large, conspicuous ones: inter-continental or intermediate-range ballistic missiles, nuclear tests in the atmosphere, and large-scale military manoeuvres. Even after the advent of modern and sophisticated verification systems, there is still some truth in this proposition. Disarmament and arms control agreements reached between 1985 and late 1990 include:

1. *1986 Stockholm accord*. Signed on 22 September 1986, this agreement is concerned with confidence-building measures, and involves essentially inspection without disarmament. It thus has no direct conversion implications. However, it is part of a process of developing greater openness about arms issues—a process which has also contributed to some arms reductions and to a frank international discussion of conversion issues.
2. *1987 United States-Soviet Treaty on intermediate nuclear forces*. Signed on 8 December 1987, this Treaty requires the United States and the USSR to phase out an entire class of weapon

(land-based nuclear delivery systems of intermediate range) by the end of 1991. The United States is required to eliminate 859 intermediate- and shorter-range missiles, and the USSR, 1,752 intermediate- and shorter-range missiles. By prohibiting future construction of missiles of this range, this agreement does raise conversion questions directly.

3. *1990 United States- USSR chemical weapons destruction Agreement.* This Agreement, signed by President Bush and President Gorbachev on 1 June 1990, calls for the destruction of the vast bulk of the United States and Soviet declared chemical weapons stockpiles, with on-site inspections to confirm that destruction has taken place. Destruction will begin in 1992, as soon as it can be undertaken in a safe and environmentally sound manner. It will proceed until both sides reach a declared stockpile of 5,000 tons— about 20 per cent of the existing United States stockpile level—by the year 2002. Both countries will stop producing chemical weapons upon the entry into force of this Agreement (which still needs Congressional approval), without waiting for conclusion of a global chemical weapons ban, which is still under negotiation in the Conference on Disarmament.

The first two agreements above (the Stockholm and INF accords) mark a significant departure from previous accords in that they are both focused on Europe. In the past thirty years, European countries have generally been in favour of arms control—by others. Most have played a full part in such global arms control regimes as the 1963 partial-test ban Treaty and the 1968 non-proliferation Treaty, and some European countries have carried out those arms control obligations imposed on them in the decade after the Second World War. However, by and large Europe presented until 1987 an apparent paradox: an exceptionally stable continent, but one with little in the way of regional arms control.

A number of other agreements concluded since 1985 have a bearing on disarmament. For example, the 1988 Treaty on the withdrawal of Soviet forces from Afghanistan (completed on schedule on 15 February 1989) and the 1990 Soviet troop withdrawal agreement with Czechoslovakia.

Further, and no less significant than formal international agreements, there has been a series of unilateral changes in the structure of the armed forces of various States. Historically speaking, unilateral changes are at least as important as multilateral agreements as means by which

States can move away from heavy commitments to armed forces and to military industries. Cost-cutters from departments of finance have probably had as much effect in limiting armaments as have arms controllers.

In recent years, the most dramatic single announcement of unilateral cuts in armed forces was that made by Mikhail Gorbachev in his address to the United Nations General Assembly in New York on 7 December 1988:

“Today, I can report to you that the Soviet Union has taken a decision to reduce its armed forces.

“Within the next two years their numerical strength will be reduced by 500,000 men. The numbers of conventional armaments will also be substantially reduced. This will be done unilaterally, without relation to the talks on the mandate of the Vienna meeting.”

In that speech, Gorbachev also undertook to eliminate a total of 10,000 tanks, 8,500 artillery pieces, and 800 combat aircraft from forces located in eastern Europe (including European areas of the USSR) by 1991. Then in January 1989 he announced a 14.2 per cent reduction in military spending and a 19.5 per cent cut in military production. These reductions are, in fact, to be implemented by the end of 1991.

Possible Further Measures of Arms Control and Disarmament

Possible further arms limitation and disarmament agreements on which negotiations are well advanced include:

1. *Conventional armed forces in Europe (CFE) treaty*. The bloc-to-bloc negotiations on this complex accord began in March 1989, and were well advanced by fall of 1990. The CFE negotiations are attempting to draw up the most ambitious multilateral accord on conventional armaments ever. It is intended to reduce to equal levels, on the NATO and Warsaw Treaty sides, five types of armaments: tanks, armoured troop carriers, artillery, combat helicopters and combat aircraft. If concluded along the lines so far envisaged, the treaty will entail the destruction of nearly two thirds of major Soviet conventional armaments west of the Urals. This is only a first phase, as NATO leaders stated in their London Declaration of 6 July. They also stated in that document:

“We propose that, once a CFE Treaty is signed, follow-on talks should begin with the same membership and mandate, with the goal of building on the current agreement with additional measures, including measures to limit manpower in Europe.”

2. *Strategic arms reduction talks (START) treaty.* The United States-Soviet negotiations are well advanced—and indeed have been well advanced since at least 1988. As with CFE, so with START, on 1 June 1990 President Bush and President Gorbachev reaffirmed earlier commitments to complete work on this treaty in the course of 1990. They also reviewed its detailed provisions.

The START treaty will reduce, by up to 50 per cent in certain categories, the intercontinental nuclear delivery systems of the United States and the USSR.

The Presidents stated on 1 June 1990 that, following the signing of the START treaty, “the sides will hold consultations without delay regarding future talks and these important talks will begin at the earliest practical date”. Moreover, in the new negotiations, “the two sides agree to place emphasis on removing incentives for a nuclear first strike, on reducing the concentration of warheads on strategic delivery vehicles, and on giving priority to highly survivable systems”.

3. *Comprehensive convention prohibiting chemical weapons.* Negotiations on a comprehensive, effectively verifiable convention prohibiting the development, production, stockpiling and use of all chemical weapons worldwide, and on their destruction, have long been taking place within the framework of the Conference on Disarmament in Geneva. Attention has lately focused on the thorny issue of verification (which presents special difficulties in the field of chemical weapons) at the top of the agenda.

Such an agreement would complement (a) the 1925 Geneva Protocol, which is a prohibition on use, but not on possession, of such weapons; and (6) the 1990 United States-USSR Agreement on the destruction of their chemical weapons.

The above list by no means exhausts the range of arms control and disarmament measures which are widely anticipated for the 1990s. Numerous other matters are already, or are soon likely to become, subjects of detailed negotiation.

NATO's London Declaration of 6 July 1990 indicated that *short-range nuclear forces* would be the subject of negotiation “shortly after a CFE agreement is signed”.

In addition, there are good prospects that nuclear weapon testing and peaceful nuclear explosions will be brought under a more stringent formal regime. In the Bush-Gorbachev summit in May-June 1990, the

United States and the USSR completed verification protocols for two previously existing but unratified Treaties—the 1974 threshold test-ban Treaty and the 1976 peaceful nuclear explosions Treaty; and both sides stated that they observe the 150-kiloton limit on the permitted yield of underground nuclear tests.

A wide range of confidence- and security-building measures (CSBMs) is under discussion in various East-West talks. This has included the Western initiative on Open Skies, discussed at the Budapest Conference (April-May 1990). It has also included some proposals, mentioned in the NATO London Declaration, for “a CSCE Centre for the Prevention of Conflict that might serve as a forum for exchanges of military information, discussion of unusual military activities, and the conciliation of disputes involving CSCE member states”.

Unilateral (or alliance-wide) changes which it is intended to implement in the 1990s include moves in the direction of limiting the offensive capability of conventional armed forces. Since 1986, Gorbachev has made a number of commitments to this, as have leaders of several other member States of the Warsaw Treaty. Bush, at his news conference in London on 6 July 1990, stated: “We will also seem in the '90s to achieve further far-reaching measures to limit the offensive capability of conventional armed forces. We'll change our strategy for a conventional defence. We agreed to move away from NATO's current strategy of forward defence to a reduced forward presence.”

At the Bush-Gorbachev summit of May-June 1990, the two parties declared their commitment to preventing the proliferation of nuclear weapons, chemical weapons, and missiles capable of carrying such weapons and certain other missiles and missile technologies, in particular those subject to the Missile Technology Control Regime (MTCR). In addition, the subject of nuclear weapons proliferation will be addressed at the Fourth Review Conference of the non-proliferation Treaty (NPT) in Geneva in August-September 1990.

No historian of arms control could possibly believe that all the measures currently envisaged will in fact be concluded in full and on time; nor that, even if they are, their implementation will be entirely smooth. It is true that progress in negotiating many accords has been remarkable and that implementation of the 1986 Stockholm and 1987 INF accords has so far been highly satisfactory. However, the sheer complexity of some measures now under consideration, and the number of parties involved, are such as to call for a degree of caution.

Problems of International Security and Conversion in the 1990s

While the range of disarmament and arms control accords, activities and negotiations is remarkable, indeed historically unprecedented, certain limits are clear. Five may be pointed out here:

First, much of this activity is based on a clear and very limited aim: the maintenance of systems of defence and deterrence, but at lower cost, or with lower risk of conflict and misunderstanding. The sheer pace and extent of recent progress can easily deceive the eye and lead to the assumption that it represents progress towards very substantial disarmament, when it does not, or at any rate not yet, point in that direction. On the contrary, many who have supported or participated in recent arms control moves make no secret of their belief that conflict is an enduring feature of human affairs, that old threats may disappear only slowly and new ones emerge rather quickly, that general systems of collective security do not have a very good record, and that some kind of military defence will continue to be needed for the foreseeable future.

Secondly, some types of armed force have, up to now, largely escaped arms control restrictions. This is most notoriously the case with naval forces. While these are subject to various measures to reduce the risk of incidents, they are not subject to any major overall limitations. The Soviet Union has long been calling for East-West talks on naval arms control, but the West, led by the United States, has resisted such calls. In the field of arms control, there is always the risk that types of weaponry which have escaped formal limitations will become the focus of new research, development, production and deployment.

Thirdly, much of the recent arms control progress is limited to Europe. Indeed, this progress might properly be viewed as marking an end to Europe's position as the most highly armed continent. While there have been many arms control developments affecting the non-European world in various ways (and there are many arms control accords, especially those of a regional character, which have originated outside the European and East-West contexts), it is still far from self-evident that the non-European world will participate in the current trend. Many non-European countries, especially those in the post-colonial world, are involved in regional conflicts of a serious and enduring character; such conflicts are not likely to disappear just because East-West relations have improved.

Fourthly, as noted above, the economic benefits of arms control are likely to be slower in coming than those who are looking for the

“peace dividend”, whether in the West or in the East, hope. This is partly because arms control is itself very expensive. Cutting up tanks, which are intended to be difficult to destroy, is itself costly; so is destroying or dismantling missiles. Further, verification systems—especially in the field of conventional and chemical weaponry—will have to be elaborate, intrusive and costly.

Fifthly, as far as actual disarmament is concerned, one Power is having to make far larger reductions than any other. The recent and envisaged agreements, coupled with the unilateral measures it is undertaking, will do much to modify the Soviet Union’s unhappy position as a Power whose entire economy has been distorted by its past overcommitment to military production and preparedness. For this reason alone, the conversion problem, although serious in many other countries, including my own, affects the Soviet Union more than any other country.

In the Soviet Union, as elsewhere, the picture is by no means a simple one of a single dominant trend towards disarmament. On the contrary, it is a very complex picture. For example, in the field of naval armaments, according to Western reports, there has been continuing production of the two 67,000-ton Tbilisi class aircraft carriers, and of a 75,000-ton carrier laid down in 1988; and more Soviet submarines were launched in 1989 than in any year since 1980.

If arms control agreements and negotiations remain on track, but the conversion problem is not tackled speedily and effectively, serious problems will quickly arise. There is the possibility that arms production in the various States involved will continue, with surplus weapons (quite possibly older ones) being sold off to third world countries for hard currency. This is a problem which may affect such countries as the United States, France and the United Kingdom, with manufacturing industries which are less dynamic than those of the Federal Republic of Germany and Japan and chronic balance-of-payments problems.

Arguably, many past arms sales by many Powers can be interpreted in such a light. For example, in the mid-1950s, Soviet and Czechoslovak arms sales to the Middle East may in part have been a response to the ending of the Korean War, and the need to find a new outlet for a military production system which had acquired considerable momentum. Similarly, after 1975, Czechoslovakia’s supply of Semtex explosives to the Libyan Arab Jamahiriya may have been in part a response to the end of the war in Vietnam, Czechoslovakia having supplied large quantities of Semtex to North Vietnam. Only efficient conversion

mechanisms in all countries involved can reduce the risk that compensatory markets will be found for weapons not required in Europe.

Yet efficient handling of the conversion problem is extremely difficult. To the distinguished economist Wassily Leontief of New York University is attributed a story about an early Pugwash Conference at which a Western participant said: "We hope that you socialists with your emphasis on planning can help us to solve the problems of conversion." The inevitable Soviet reply was: "We were hoping that you capitalists could do the same for us."

Certainly there is an overwhelming case for major East-West collaboration in tackling conversion problems. This is not only because both planning and market economics have key roles to play in such a process, but also because conversion presents some common opportunities. For example, modern high-speed rail networks are conspicuously lacking in both the USSR and the United States, and could be a suitable focus for the engineering skills and capacities presently tied up in military projects.

Perhaps the most serious reason for East-West collaboration on conversion is that the scale of the problem, especially in the USSR, is so vast. This is not because the reduction of military production is complete—indeed, the current Soviet target figure is 19.5 per cent—but rather because conversion is itself part of the very much larger problem of modifying the excessive centralisation of the Soviet economy. The difficulties of the process have been recognised by Soviet economists and officials.

A further special problem of the conversion process for the Soviet Union is that in some fields, both military and civil, the scope for its exports may in important respects actually shrink in coming years. There are already signs of a general reduction of trade between the Soviet Union and Eastern Europe. Armaments exports to Warsaw Treaty allies are likely to be reduced because these countries will themselves be affected by various arms control agreements and, in the field of civil aviation, Eastern European airlines may look westwards when they come to renew or extend their fleets. This underlines the conclusion that conversion in the Soviet Union, as in the Eastern European countries, has to be seen as simply one small part of a move towards bringing many sectors of industry up to world standards, opening them up to market competition, and decentralising their decision-making structures.

Indeed, in much Western usage, the term "conversion" applies to this larger subject. For instance, the Final Communique of the Ministerial

Meeting of the North Atlantic Council at Turnberry, United Kingdom, in June 1990 welcomed the "agreement at the recent Bonn Conference on Economic Co-operation in Europe on fundamental principles to guide the conversion from planned to market-oriented economies".

If East-West collaboration in tackling conversion issues is urgently needed, it also faces obstacles. Some of these may involve an element of Western reluctance so far as certain aspects of the conversion problem are concerned. One obstacle is the tendency, evident in some pronouncements by Western Governments, to soft-pedal the discourse on conversion because of an ideological belief that this matter is best left to companies, industries, and enterprises, not to governmental bodies, to handle. A second is the undoubted fact that conversion issues are very different in character in East and West: this is not just because the Soviet arms industry has unique features, but also because in the West the arms industry is increasingly internationalised. A third is the complacent view, occasionally found in the West, that conversion is essentially a Soviet problem. A fourth is the continuing, if declining, embargo on trade with members of the Warsaw Treaty, which presents a potential obstacle to some aspects of collaboration on conversion. Such factors probably help to explain why the subject of conversion from military to civilian production has been addressed so little in the numerous Western communiques of recent months.

Conclusions

Much in post-war economic history validates the assumption of so many economists that defence expenditure is simply a burden on the economy. Crude as this view may be in some respects, and important as security undoubtedly is as a basis for economic development, in the years since 1945 it has often been the low military spenders, exemplified by the Federal Republic of Germany and Japan, which have produced the most impressive economic results. The debate about conversion is in part a debate about how to draw the right conclusions from that observation.

In both East and West, the conversion problems which now have to be tackled are fundamentally different in character from those envisaged in much of the past international discourse on the subject. While there is much to learn from it, there is also a great deal of new work to be done based on the actual situation that is now faced, with its special opportunities and also dangers. At the same time, however, there has to be respect for past work in the field, including past practical experience. There is a great deal to learn from the many interesting

cases of conversion—in the Soviet Union, the United States, Japan and others—at the conclusion of the Second World War. The discourse about conversion always runs the risk of becoming excessively programmatic, but in this field, as in others, the devising of great abstract schemes, however attractive, is no substitute for experience, nor for understanding the actual problems which actual countries, industries, enterprises and individuals have to face.

SPECIFIC ISSUES OF CONVERSION: INDUSTRIES AND TRADE

The Political and Economic Background

Both political developments in Europe during and after 1989 and progress towards a conventional arms control agreement have far-reaching consequences for the arms industry and armed forces. Economic and human resources that have been invested in the arms race are now available for more constructive purposes. Economic opportunities and problems emerge from the disarmament process. Parts of the arms industrial base are becoming redundant. Unless growing over-capacities in the arms industry are tolerated and financed by Governments, strategies to reduce the size of the base will have to be developed. A fundamental restructuring of it will occur as a result of:

1. *The changed international climate, culminating in the collapse of the traditional European security system.* As a result of Soviet economic and political reforms as well as the fundamental political changes in the other Warsaw Treaty countries, threat perceptions have changed radically. A revision of force structures, including both the size of the armed forces and long-term procurement plans, will be the likely outcome of strategic reviews under way within national Governments and the North Atlantic Treaty Organisation (NATO). The planning process has broken down completely in the German Democratic Republic, Czechoslovakia, Romania, Hungary and, to a lesser extent, Poland.
2. *The Negotiation on Conventional Armed Forces in Europe (CFE).* Even though these negotiations have not kept pace with the speed of political change in Europe, verified reductions of weapons inventories are going to occur under a CFE agreement. For a number of major weapons systems, the ceilings proposed at the CFE negotiations leave little room for modernisation, unless Governments replace virtually new weapons systems only recently acquired.

3. *Financial constraints.* In the generally more benign international climate, constraints on military expenditure budgets have grown as other economic priorities compete more successfully for allocations. Procurement budgets in most European NATO countries are not growing; in some countries they have already fallen, and the most realistic prediction is that they are likely to fall on an average in European countries.
4. *Reduced possibilities for arms exports.* Within and outside the major military Alliances, an increasing number of countries are trying to produce arms. Expanded arms exports are not, however, a viable alternative for arms industries. Arms exports decreased in 1989 for the second year, and scarce hard currency reserves in third world countries will limit the scale of future exports as well.

In this paper I will describe the volume of the arms trade and the size of the arms industry, based on statistics of the Stockholm International Peace Research Institute (SIPRI). I will then estimate and elaborate the economic dimension of two of the above-mentioned new factors, namely, the budget situation, illustrated for the Western European countries, and the effects of a conventional arms control agreement.

The Arms Trade

During the 1980s the value of the trade in major conventional weapons fluctuated between roughly \$30 billion in 1980 and almost \$39 billion in 1987, an exceptional "peak" year. These statistics are trend indicators of the deliveries of major conventional weapons and not figures which measure what was actually paid for the arms supplied. In contrast to the 1970s, which were characterised by a high growth rate, the overall trend from 1982 on was a shrinking in the overall growth rate of the global trade in major conventional weapons. The value for 1989, expressed in 1985 United States dollars, decreased once again, to \$31,819 million.

A major change in the international arms market— the growing importance of imports by industrialized countries— was also in evidence in 1989. The share of the industrialised countries in the global trade was approximately 33 per cent in 1987, 42 per cent in 1988 and 50 per cent in 1989. In contrast, the share of imports of major conventional weapons by third world countries, expressed in United States dollar

values, fell substantially to \$16,427 million in 1989, the lowest level since 1976.

The gradual but constant growth of imports of major conventional weapons systems by industrialised countries, during the period 1985-1989 reflected the rising importance of Japan and —despite the prospects for conventional arms control in Europe—the NATO countries.

The declining importance of the third world on the global arms market was associated with a number of political and economic factors, the three most important of which were the following:

1. Less hard currency was available to a number of leading importers, several of whom were highly indebted and could not spend as much on arms imports as in the past. Ironically, one result of the debt crisis was a reduction in arms imports, and recovery from debt could cause an upswing in the trade in arms unless agreements to provide assistance with debt servicing are conditional on funds not being used for armaments programmes. The members of the Organisation of Petroleum Exporting Countries (OPEC) had fewer funds at their disposal as a result of declining oil prices, until the recent upsurge in the summer of 1990.
2. Several “hot wars” ended: notably those between Iraq and the Islamic Republic of Iran and between South African and Cuban/Angolan forces in Namibia. As a result, arms imports by these countries dropped considerably. In contrast, fighting escalated in Afghanistan after the final withdrawal of Soviet troops on 15 February 1989. The Afghan armed forces received large quantities of weapons from the Soviet Union in 1989.
3. The expansion of arms industries in a number of third world countries meant that a reduction in arms imports by historically large importers—notably Egypt and Israel—did not imply a reduced armaments dynamic. Other countries began to seek to develop arms production facilities—notably Iran and Iraq.

The Soviet Union and the United States continued to dominate the trade in major conventional weapons in 1989, accounting for 37 and 34 per cent, respectively, of the world total (see table 1). The overall situation—with France as the third largest exporter, followed by the United Kingdom, China and the Federal Republic of Germany— did not change significantly from 1988.

China remained the fifth largest exporter of major conventional arms for the period 1985-1989, with a total of nearly \$7 billion in sales. The growth in Chinese arms exports in the 1980s was closely linked to supplying Iraq and Iran. In 1989, total exports were reduced to half the value for the previous year, and Pakistan and the Democratic People's Republic of Korea emerged as the major importers of Chinese arms; China returned to its pre-1980 export pattern.

TABLE 2

The Leading Exporters of Major Weapons, 1985-89

The Countries are Ranked According to 1985-1989 Aggregate Exports. Figures are in Millions of United States Dollars at Constant (1985) Prices

<i>Exporters</i>	<i>1985</i>	<i>1986</i>	<i>1987</i>	<i>1988</i>	<i>1989</i>	<i>1985-1989</i>
<i>To the Third World</i>						
1. USSR	8563	10327	10759	8238	8515	46402
2. United States	4024	4925	6270	3649	2528	21397
3. France	3588	3355	2518	1312	1527	12299
4. China	1017	1193	1960	1781	718	6669
5. UK	903	1020	1530	1165	993	5610
6. FR Germany	395	649	252	480	149	1925
7. Italy	578	398	319	360	30	1685
8. Netherlands	38	132	263	402	572	1406
9. Brazil	172	134	491	338	182	1318
10. Israel	160	242	273	117	216	1008
11. Czechoslovakia	124	124	198	176	287	908
12. Sweden	35	141	298	240	134	847
13. Spain	139	185	160	206	143	833
14. Egypt	124	159	194	232	62	771
15. North Korea	95	48	98	123	—	364
Others	621	528	587	437	371	2 547
TOTAL	20576	23560	26170	19256	16427	105989
<i>To the Industrial World</i>						
1. United States	4776	5 347	6 259	6 856	8 228	31 465
2. USSR	4233	4 252	3 960	4 226	3 137	19 807
3. France	382	650	379	888	1 205	3 503
4. FR Germany	631	458	422	952	631	3094
5. UK	797	409	135	132	628	2101
6. Czechoslovakia	373	373	373	373	259	1750
7. Sweden	129	183	191	338	189	1029
8. Canada	99	433	350	49	8	939
9. Poland	92	92	92	92	92	462
10. Italy	68	58	69	78	119	392

<i>Exporters</i>		1985	1986	1987	1988	1989	1985-1989
11.	Switzerland	13	6	15	19	305	357
12.	Netherlands	51	109	2	130	58	350
13.	Spain	—	8	—	6	262	276
14.	China	71	—	—	62	62	194
15.	Norway	36	9	43	16	72	176
	Others	176	91	378	145	137	932
	TOTAL	11927	12 478	12 668	14 362	15 392	66 827
<i>To All Countries</i>							
1.	USSR	12796	14 579	14718	12464	11652	66 209
2.	United States	8800	10272	12529	10505	10755	52 862
3.	France	3970	4005	2896	2199	2732	15 802
4.	UK	1699	1429	1665	1297	1620	7711
5.	China	1088	1193	1960	1842	779	6862
6.	FR Germany	1025	1108	674	1432	780	5019
7.	Czechoslovakia	497	497	570	548	546	658
8.	Italy	646	456	388	438	149	2 077
9.	Sweden	163	324	489	577	323	1877
10.	Netherlands	88	240	265	532	631	1756
11.	Brazil	188	150	507	356	183	1385
12.	Israel	227	250	346	133	228	1183
13.	Spain	139	193	160	212	404	1 109
14.	Canada	132	472	387	75	37	1103
15.	Egypt	124	159	194	232	62	771
	Others	922	710	1089	777	938	4 432
	TOTAL	32504	36037	38837	33619	31819	172 816

Source: SIPRI Yearbook 1990, pp. 220-221.

While the value of total exports of major conventional arms diminished in 1989, several suppliers increased their share of the market—notably France, the United Kingdom and Spain. Soviet exports to the third world increased (to \$8.5 billion), while Soviet exports to industrialised countries fell (to \$3.1 billion). For the United States the opposite trend is noticeable, with supplies of major conventional weapons to the third world falling substantially and the increase in exports to industrialised countries continuing. Several third world arms exporters that had increased their share of the world arms trade in the 1980s sold fewer weapons for the second consecutive year. In 1989, arms exports of third world countries were down to one third of the 1987 sales, amounting to less than 2 per cent of the global trade in arms. This decline was mainly due to reduced deliveries to countries at war, especially to Iraq and Iran.

A small group of countries—Egypt, India, Iraq, the Democratic People's Republic of Korea, Saudi Arabia and the Syrian Arab Republic in the third world, and Czechoslovakia, Japan, Poland, Spain and Turkey in the industrialised world—accounted for the major share of global arms imports (see table 2). In 1985-1989, the 15 leading third world importers accounted for 78 per cent of third world imports, and the 15 leading importers in the industrialised world accounted for 83 per cent of industrialised world imports. Argentina no longer figured in the list of the leading third world importers, as imports continued to fall from the mid-1980s; Argentina was replaced by Thailand, which imported large quantities of weapons in all categories from China, the Federal Republic of Germany, Israel, Italy, the Netherlands, Switzerland, the United Kingdom and the United States.

TABLE 3

The Leading Importers of Major Weapons. 1985-89. The Countries are Ranked According to 1985-89 Aggregate Imports. Figures Are in Millions of United States Dollars at Constant (1985) Prices

<i>Importers</i>	<i>1985</i>	<i>1986</i>	<i>1987</i>	<i>1988</i>	<i>1989</i>	<i>1985-1989</i>
<i>Third World</i>						
1. India	1876	3683	4585	3383	3819	17345
2. Iraq	2871	2447	4247	2005	418	11989
3. Saudi Arabia	1447	2395	1956	1770	1196	8764
4. Syria	1690	1508	1169	1172	336	5876
5. Egypt	1282	1665	2347	348	152	5795
6. North Korea	977	876	487	1383	1553	5275
7. Afghanistan	82	611	687	939	2289	4610
8. Angola	694	975	1135	890	24	3719
9. Libya	969	1359	294	65	499	3186
10. Taiwan	664	866	640	513	263	2946
11. Iran	710	746	685	538	261	2940
12. Pakistan	675	616	467	467	694	2919
13. South Korea	388	267	597	934	607	2794
14. Israel	193	446	1629	327	93	2687
15. Thailand	305	74	644	510	330	1862
Others	5753	5026	4601	4012	3893	23285
Total	20576	23560	26170	19256	16427	105989
<i>Industrial World</i>						
1. Japan	1634	1745	1771	2343	3062	10554
2. Czechoslovakia	1332	1086	967	1067	828	5280
3. Spain	270	1039	1513	1580	749	5152

<i>Importers</i>	1985	1986	1987	1988	1989	1985-1989
4. Turkey	604	621	1153	1 238	1134	4751
5. Poland	427	1057	983	1063	1118	4649
6. Canada	877	828	732	526	444	3408
7. Greece	192	156	93	860	1813	3114
8. GDR	663	482	325	865	625	2960
9. Australia	352	699	478	579	847	2955
10. Netherlands	814	702	296	154	761	2727
11. USSR	497	473	497	483	359	2310
12. Bulgaria	589	666	598	220	—	2073
13. Hungary	759	507	592	—	—	1859
14. FR Germany	199	411	320	301	613	1844
15. Yugoslavia	103	103	234	748	450	1639
Others	2615	1903	2116	2335	2589	11552
TOTAL	11927	12478	12668	14362	15392	66827
<i>All Countries</i>						
1. India	1876	3683	4585	3383	3819	17345
2. Iraq	2871	2447	4247	2005	418	11989
3. Japan	1634	1745	1771	2343	3062	10554
4. Saudi Arabia	1471	2395	1956	1770	1196	8764
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13. Angola	694	975	1135	890	24	3719
14. Canada	877	828	732	526	444	3408
15. Libya	969	1359	294	65	499	3186
Others	15472	14142	14811	13847	14198	72463
TOTAL	32504	36037	38837	33619	31819	172816

Source: SIPRI Yearbook 1990, pp. 208-209.

In 1989, for the first time in 20 years, the Middle East was not the leading importing region. South Asia (largely because of deliveries to India and Afghanistan) replaced the Middle East as the region with the highest arms imports. Almost all the Middle Eastern countries reduced their imports of weapons, and Iraq's imports were only 10 per cent of the figure recorded for 1987.

In South Asia, by contrast, overall imports increased. India is by far the largest importer of major weapons in the world. Hopes for a settlement of the conflict in Afghanistan have not been fulfilled, and fighting escalated during 1989. Massive military support to the Afghan Government came from the Soviet Union. According to the SIPRI major weapons trend indicator, Afghan imports (by both the Government and the Mujahideen) more than doubled in 1989.

In contrast to decreasing arms imports by the third world, the trend of increasing imports by industrialised countries continued. This overall growth was actually due to specific developments in a few countries. While some Warsaw Treaty members remained leading importers of (mainly Soviet) major conventional arms, the trend of reduced imports by these countries continued; in 1989 the recorded value was \$2.7 billion, compared to \$4 billion in 1985. It is likely but far from certain that this trend will continue because of the political changes in these countries in 1989, unilateral withdrawal of weapons and possible reductions as a result of arms control agreements.

Arms imports by NATO countries, however, grew over the period 1985-1989 from \$3.8 billion to \$7 billion. Major modernisation programmes in Greece, Spain, Turkey and, to a lesser extent, Norway were not affected, at least in the short term, by political changes in the Warsaw Treaty countries or prospects for a conventional arms control agreement.

In the Pacific region, Japan and Australia both increased their arms imports and invested heavily in the expansion of their respective arms industrial bases. For 1989, Japan is recorded as the second largest importer in the world, with \$3.1 billion, surpassed only by India. Australia's position as a leading importer in the Pacific region is likely to be strengthened by its 1989 decision to produce 10 frigates. Components, subsystems and weapons will be imported to produce these fighting ships in Australia. While the Pacific region has not recently been a region of particular importance in terms of arms production or trade, this situation is changing in a period when political developments in Europe promise disarmament.

The Arms Industry and Its Future

While the arms industrial bases in NATO and the Warsaw Treaty are roughly comparable in size, the information available about them certainly is not. Information about the NATO countries (especially in the United States) is readily available, but this is not the case in the

Warsaw Treaty countries, despite *glasnost* and the recent increase in the flow of information on military budgets. According to statistics available in the West, the procurement budgets in most Warsaw Treaty countries have been reduced, and the production of major weapons systems has slowed down. What is still lacking are systematic and detailed studies of the size of this industry, its turnover, employment, technological capability, etc. In contrast to the NATO countries, the Soviet Union and other members of the Warsaw Treaty declared their intention to restructure the arms industrial base. The need for changes has many causes, but the main reason to include the arms industry in programmes of reform is the critical economic situation. In the longer term the economy could benefit from both freeing resources currently invested in the arms industry and redirecting the technological skill within this sector. What is lacking in most other countries, including NATO countries, is detailed information on the size of the actual producers, that is, the corporations that play an important role in the weapons acquisition process.

The 100 Largest Arms-Producing Companies

An examination of the arms sales of the 100 largest arms producers in the OECD (Organisation for Economic Co-operation and Development) countries and in the third world reveals a number of important facts about the structure of this industry. The most outstanding characteristic of these firms, ranked by arms sales, is that almost one half of them are located in the United States, with 12 British, 10 French and 9 from the Federal Republic of Germany, and below this group, 5 Japanese corporations. The remainder comprises 5 more companies from NATO countries (3 Italian, 1 Dutch and 1 Spanish), 5 from the European neutral countries (4 Swedish and 1 Swiss) and 6 from third world countries.

The importance of United States companies is even more clearly highlighted by the fact that all but one of the 10 largest corporations are based in the United States. Of the 20 largest companies, 15 are American, and of the first 60, 34 are American. Not only the largest number by far, but also the biggest, are located in the United States. The 48 United States companies combined account for nearly two thirds (64.1 per cent) of the total arms sales of the top 100 corporations. This is an expression of the size of the procurement budget in the United States and a reflection of the fact that the Government mainly "buys American". While United States global arms exports are the second largest in the world, for most companies exports are not significant

compared to sales on the United States market. The United States accounted for about 30 per cent of world military expenditure in 1989.

The 12 British corporations represent, with their share of 10 per cent of the arms sales of the 100 largest companies, a comparatively small percentage; the same is true for the 10 French companies (8.5 per cent of total arms sales) and the 9 companies of the Federal Republic of Germany (5.5 per cent). This state of the industry is the background against which many politicians in Western Europe worry about their competitiveness and regularly call for closer co-operation among themselves in the face of the dominant United States companies.

Two other factors with respect to country distribution are of interest. Japan has been known in the past for its limited involvement in arms production. While the share of Japan's military expenditure in its gross domestic product (GDP) still remains around 1 per cent, the booming Japanese economy means a boom for the arms industry as well. The low priority traditionally given to arms production in Japan has changed as several big corporations have invested in this sector, thus adding to the problem of global over-capacities and competition.

Only 6 companies in third world countries are among the 100 largest arms-producing enterprises. Many third world Governments have actively promoted indigenous production of arms. Compared to companies of the industrialised countries, these companies are small (not in the number of employees but in the value of their arms sales). They account for barely 1.7 per cent of arms sales among the 100 largest companies. Furthermore, some of them have experienced difficulties when the arms trade stagnated. As a result, the arms sales of many companies in Argentina, Brazil, Egypt, India, Israel, the Republic of Korea, Singapore, South Africa, and also Taiwan, are below \$300 million—the amount of sales of the smallest of the 100 largest corporations. Overall, the volume of arms sales is highly concentrated. The first five companies account for more than one fifth of the arms sales of the top 100. More than 36 per cent of the volume is produced by the 10 largest companies, and the top 25 companies account for almost two thirds of the arms sales.

An interesting feature is the dependence of these companies on arms production. This is particularly important in a period—as at present—when contractors expect a cut in orders. How will they react when their weapons business is endangered? The less they depend on arms production, the more promising is their scope for alternatives.

Most companies have other interests outside the arms business. Only 3 of the largest corporations are totally dependent on arms production: 2 French state-owned corporations and the British VSEL consortium. In addition to these 3 producers, 13 companies generate three quarters or more, and another 16 generate half or more of their sales in the arms sector. Many of the largest United States companies are highly specialised in arms production: 8 of the 15 United States corporations that are among the top 20 producers depend as much as 50 per cent or more (even up to 84 per cent) on arms production. The other side of the coin is the presence of large, diversified concerns that rank among the top 100 producers, but with only a small fraction of their sales in the arms sector.

Prominently represented among the largest companies are producers in the fields of aerospace, missiles and electronics. This reflects the fact that the traditional arms manufacturers that produce artillery, tanks and hulls of fighting ships have lost ground to the high-technology producers. This trend is likely to continue.

Trends in Procurement Budgets and Possible Employment Effects in European NATO Countries

Economic burdens from investment in the military sector have been one of the causes of a thorough revision of Soviet military policy. But the burdens are not a concern exclusively in the Soviet Union. Budgetary constraints in many NATO countries have grown as a result of competing domestic economic priorities, particularly in the context of a generally more favourable East-West climate. The possible success of arms-control negotiations may have already affected Governments' readiness to allocate funds to the military. The perception of a disappearing threat and the fading of enemy images seem to be giving finance ministries more power to question military budgets. This is clearly reflected in the budget situation in the European NATO countries in 1990.

The Procurement Budgets

After decades of growth in procurement expenditures in the European NATO countries, the budgets have levelled off to an order of magnitude of approximately \$32 billion-\$33 billion (see table 3). In real terms approximately the same amount was spent in 1989 as in 1984. The arms industry, which for decades was used to increasing procurement and expanding exports, was confronted during the second half of the 1980s with a stagnating market in Western Europe and shrinking exports. Nevertheless, with numerous major national and

co-operative programmes in the planning and development stage, arms production companies in European NATO countries were optimistic about their business prospects. However, with the changed international climate in 1990 and the difficult financial situation in many countries, the military budgets have not been spared adjustments, and the arms industry faces an entirely new situation.

The Future of Procurement

After 1989 the situation changed, and actual cuts are being proposed or have already taken place, as table 4 illustrates. With the exception of the two smaller European NATO countries, Norway and Portugal, increases in procurement are not planned in any of the NATO countries.

While cuts in real terms are the norm for procurement budgets, this is not the case for research and development. This area has so far not been affected by budgetary cuts. Research and development is being funded in most NATO countries at a higher level than ever before. In the Federal Republic of Germany, the R&D budget of the Ministry of Defence will increase in 1990 by 11.3 per cent. In France, the 1990 budget for R&D on conventional weapons is increasing by 14 per cent, and the space programmes of the Ministry of Defence are increasing by as much as 52.3 per cent. In the United Kingdom the situation is somewhat different. In a generally declining public R&D budget (in real terms), the share of R&D of the Ministry of Defence will remain unchanged. The Government has successfully tried to encourage companies themselves to bear some of the R&D expenditures. The Ministry's expenditures on R&D are expected to be reduced from £2.4 billion in 1986-1987 to £2.1 billion in 1991-1992.

Governments in most countries follow a kind of double-track strategy. On the one hand, conventional arms-control negotiations are being undertaken more seriously than previously, and negotiated cuts in manpower and equipment are official policy. On the other hand, the process of developing new and sophisticated weaponry has not been halted. Few major projects have yet been cancelled, although smaller and lower-priority programmes have been deferred and in several projects the number of systems to be acquired has been reduced. But the still-growing R&D budgets cannot compensate companies for major reductions in production and procurement. This double strategy might even exacerbate problems in the future, when today's R&D projects are ready to enter production and neither the financial nor the political situation will allow for a decision to start production.

TABLE 4
NATO Major Weapon-Procurement Expenditure, 1980-89, in Millions of United States Dollars, at Constant (1985) Prices

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Belgium	663	650	611	595	545	518	548	560	492	394
Denmark	360	396	390	386	359	308	301	339	334	346
France	6863	7490	7878	8255	8151	8492	8850	9648	9496	9722
FR Germany	5003	5919	5879	5892	5563	5002	5520	5369	5089	4998
Greece	534	689	583	497	569	535	498	541	790	733
Italy	2482	2469	2540	2883	2778	3128	3122	3954	4188	4285
Luxembourg	1.1	1.1	1.5	1.1	1.0	2.5	2.0	2.9	2.4	3.6
Netherlands	1178	1243	1344	1494	1560	1523	1346	1202	1737	1308
Norway	468	465	499	560	463	734	588	620	617	924
Portugal	70	74	59	54	49	34	73	123	141	174
Spain	1265	1135	1180	1456	1914	1168	1593	1895	1484	1093
Turkey	88	215	271	241	304	336	496	559	600	548
UK	8260	8189	8307	9240	9881	9878	9270	8859	8736	7884
European NATO										
Total	27235	28293	29543	31554	32137	31659	32207	33672	33342	32413
NATO Total	68630	74958	82441	92818	100379	106360	112313	115126	107170	106086

Source: SIPRI Yearbook 1990, p. 153.

TABLE 5
Procurement Budget Decisions by Selected NATO Countries, 1990

Country	Status
USA	Slow-down of the fiscal year 1990 procurement budget growth. Cuts of the 1991 budget. Weapon acquisition cuts would save \$28 billion compared to previous plans for FY 91 to FY 95.
Canada	Fiscal pressures led to the revision of the 1987 White Paper, including the abandonment of several major procurement programmes.
France	The original long-term procurement plan was revised in 1989. From 1990 to 1993 the defence equipment budget is expected to be reduced.
UK	The budget for 1990-91 will be lower in real terms than last year. Increased spending on manpower will put pressure on procurement. Procurement funding has declined from 45% in 1984-85 to 39.1% in the 1990-91 budget.
FRG	The procurement budget is below the 1985 level in real terms. The 1990 procurement budget will decrease by over 5%.
Italy	Cuts in the defence budget forces to reconsider the 10-year plan. Delays and cuts in the acquisition of new equipment are probably inevitable.
Netherlands	Cuts in the budget proposed.
Denmark	Military expenditures are frozen at the 1988 level until 1992.
Belgium	Cuts in the budget necessitated plans to restructure the armed forces.

Source: SIPRI arms production database.

A Prognosis for Procurement, Exports and Employment in the Arms Industry of European NATO Countries

To arrive at an estimate of the order of magnitude of the possible future development of the arms industry and its employment, two scenarios are developed below that rest on the following premises:

In scenario 1 it is assumed that annual reductions in procurement spending will amount to 3 per cent. This assumption extrapolates the most recent trends over the next five years; it is assumed that the export volumes of major arms outside NATO Europe will be stabilised at the 1985-1989 level, as recorded by SIPRI, and that annual productivity gains in the arms industry will amount to 2 per cent.

In scenario 2 it is assumed that the reductions in procurement budgets will be accelerated, as a result of the international climate and CFE ceilings on weapons systems, to 5 per cent annually; that competition on the world arms market will increase and the European NATO countries' market share will shrink by 3 per cent annually; and that annual productivity gains in the arms industry will amount, as in scenario 1, to 2 per cent.

Scenario 1 is a conservative estimate that does not account for possible major revision of projects and programmes, while scenario 2 is probably more realistic as it rests on the premise that a fundamental change in procurement policy is needed, unless tensions increase or the cold war returns. Cuts are not likely to be less than the minimum indicated in scenario 1 or to reach the maximum predicted in scenario 2. Neither scenario takes into account possible effects of conflict in the Persian Gulf area.

The result of the computation is presented in figures 2 and 3. The level of procurement of heavy equipment that amounted to \$32.5 billion in 1989 will be reduced to \$27.1 billion in 1995. The level of exports of major arms will remain constant at \$5.46 billion, the average for the years 1985-1989. Hence, the total of major equipment produced in European NATO countries will go down by about one seventh, from \$37.9 billion in 1989 to \$32.5 billion in 1995. The relevant figures in scenario 2 are \$23.9 billion for procurement of heavy equipment in 1995, plus \$4.55 billion for exports of arms of the European NATO countries to the rest of the world, which amounts to a reduction of about one third. It is realistic to assume that the production of arms will have to be reduced at least as much as anticipated in scenario 1, and probably not more than estimated in scenario 2.

The employment figures dependent on arms production will be reduced substantially from the mid-1980s level of 1,500,000, to 1,075,000 in scenario 1 and to 940,000 in scenario 2 by 1995. In this calculation it is estimated that around 100,000 jobs have already been lost during the last three years and that between 340,000 and 475,000 additional jobs will be lost in the six-year period 1989-1995. This calculation for the Western European industry is an indication of the economic dimension of arms control and disarmament. In the United States and the Soviet Union, with substantially higher employment in the arms industry, the losses of jobs associated with changing patterns of production are likely to be much higher than those in Western Europe.

Methodology

A note of caution is required regarding the applied methodology and, thus, the precision of this estimate. First, the procurement figures and the arms export figures include only major equipment. In the calculation it is therefore assumed that the remaining part of arms production and export will follow the same pattern as major equipment. Secondly, the arms procurement and export figures are not really comparable for several reasons: procurement figures are given at 1988 constant prices, and arms exports at 1985 constant prices. The SIPRI arms-export statistics are trend indicators of the deliveries of major conventional weapons and not figures which measure what was actually paid for arms supplied. Thirdly, the amount of the procurement that has been spent for imports from countries outside the group of European NATO countries has not been deducted. Finally, the employment figures of the mid-1980s were not based on detailed input-output studies—since they were not available—but are estimates based on several sources. In conclusion: the figures in both scenarios are not a precise prognosis of future developments, but estimates of the possible economic dimensions of arms control and disarmament in the European NATO countries as they affect the arms industry.

Effects of a CFE Agreement

Besides the structural adjustments required in the arms industry as a result of reduced budgets, economic repercussions will be experienced in two other areas: changed manpower needs in the armed forces (both military and civilian) and the need to withdraw or dismantle enormous amounts of equipment.

Under the envisaged CFE 1 agreement, the Warsaw Treaty countries will have to cut substantial numbers of tanks, pieces of artillery, armoured

troop carriers and air-craft. The cuts to be undertaken by NATO will be considerably lower, but nevertheless substantial.

The destruction of weapons systems—in particular the need to verify destruction in accordance with agreements—requires new investment, and the early experiences with the United States-USSR Treaty on the elimination of their intermediate- and shorter-range missiles (INF Treaty) suggests that it will be more expensive than originally anticipated. While the saving in military procurement might be beneficial to the economy, especially compared to the decades of armaments competition, the dismantling or conversion of major weapons systems, the sawing or hydraulic crushing of modern missiles, the scrapping of tanks, etc. actually represent the destruction of products that were manufactured at great cost to the economy. Beside economic costs, ecological hazards might be and have already been experienced.

Generally, the destruction and conversion of weapons are of only marginal benefit to the economy, and only in rare cases are modern weapons systems of use for non-military purposes. Thus the tens of thousands of superfluous major weapons systems in Europe will have to be destroyed. Unless provision for the destruction or the conversion to civilian use is made, these weapons might end up on the world arms market. In the present situation Governments might be tempted to sell or give away the surplus equipment to clients in the third world, since destruction would be more costly. At present the primary halt on arms exports is the lack of resources in the importing countries. Arms control progress in Europe might actually contribute to fuelling the transfer of arms to third world countries.

A second consequence of the proposed ceilings should be kept in mind: weapons inventories will have to be considerably reduced. It is likely that the older equipment will be dismantled and the latest generation of arms redistributed among NATO allies. In October 1989 both the Supreme Allied Commander in Europe, General John Galvin, and his Deputy, General Eberhard Eimler, made reference to these redistribution plans and urged avoiding “significant disarmament in zones which currently have state-of-the-art equipment. It would not make sense to destroy modern weapons systems while keeping obsolete equipment in other parts of the alliance”. This cascading of weapons would result in a modernisation programme for the armed forces of such countries as Turkey, Greece, Portugal and Spain. If the armed forces in all of the NATO countries are equipped with modern arms, there will be only a little room for new programmes. This will, of

course, increase the pressure on the interested industries. The situation is furthermore complicated since many countries are engaged in the development of weapons systems that will have to be reduced as a result of a possible CFE agreement. For example, in Western Europe alone, five new major battle tanks are in the development stage or are ready to go into production in the Federal Republic of Germany, France, Italy, Spain and the United Kingdom.

Problems of Conversion

The dislocations associated with military cutbacks will be felt in both planned and market economies, although the problems will be different in each case. In both systems conversion will have to offer new economic opportunities in order to succeed.

Barriers to conversion have been experienced in the Soviet Union during the last two years. These include: first, the specialisation of large sectors of the arms industry in very specific areas of weapon technology; secondly, the establishment of new producer-consumer relations; thirdly, the geographical concentration of factories in specific cities and regions; and fourthly, the response of the work-force to the restructuring of the defence industrial sector.

The quality of consumer products has in the past been poor, and unless economic reform affects factories at the lowest organisational level—the shop floor—it is not likely to increase. Prams produced in tank factories might look more like tanks than prams. The specialisation of the defence industry in the production of relatively small numbers of high-quality items might also prevent a smooth transition to the production of fairly unsophisticated consumer durables in very large numbers. The expansion existing consumer product lines may not be the most efficient use of skilled workers and sophisticated machine tools. Rather, a more basic adaptation of military factories to the production of high-technology civilian goods has been seen as “the best way of using the converted defence enterprises”. The returns from such a reorientation would not be quick, but they would certainly be most promising over the long term.

In addition to production problems, there are difficulties associated with the distribution of consumer good produced by the arms industry. Marketing strategies required to sell the consumer products. Whereas in the past the industry had to deal only with the ministry charge of the factories, with the conversion to civil production, new means of selling products have to be developed. Economic problems might arise,

too, since civilian products of the arms industry tend to be more expensive than competing products of the non-military sector.

In addition, problems have arisen because of the geographical concentration of factories in specific cities and regions. These communities are dependent on the defence industry for their living. Many social services in the USSR (such as the building of living quarters and child-care facilities) are the responsibility of the military-industrial complex. In areas with a high density of arms factories, conversion is likely to lead to the reduction of the wage fund and thus to a cut in social services. A major bottleneck might be the reaction of the workforce to losing the privileges associated with the high priority formerly enjoyed by the arms-production sector. Managers and employees of arms enterprises might resist converting to produce civilian goods if this means a loss of privilege. In a case-study of a factory in Votkinsk, where missiles covered by the INF Treaty were produced, the Soviet journal *Soviet Military Review* concludes:

“The factory gave birth to the town of Votkinsk and remains the main source of its prosperity... ‘Secret’ shops are staffed with most qualified and hence the highest paid workers. Let us look at the truth openly: is it easy for them to calmly regard the possibility of smaller earnings? Could they, as one newspaper wrote, ‘joyfully and with enlightened heart’ give up their privileges?”

“I think it logical that they would draw their average wages for the transitional period. But already there are wage scissors: the wage fund has remained intact but the volume of industrial output has dwindled. In general, the town is tens of millions of roubles behind the planned figures for development, and this figure is growing, revealing the difficulties of the conversion period.”

The Soviet Union has strong economic incentives for further arms-control measures and cuts in military procurement, but, in the short term, these might produce higher costs than economic benefits. The long-term prospects will be better if parochial interests in the arms industry can be controlled, traditional secrecy is removed and the skills and resources of the military sector are turned in a co-ordinated and systematic fashion towards economic modernisation. The industrial and scientific sectors most prominently promoted in the first two reform years under Gorbachev were those associated with technologies judged to be the most interesting for future weapons development. In the mean time, however, the emphasis has shifted towards the production of consumer durables.

Conclusions

The Soviet position at the CFE negotiations suggests that the period in which the USSR and its allies tried to offset the technological edge of NATO and especially the United States with the deployment of large numbers of weapons is over. In order to confront domestic economic difficulties, President Gorbachev is prepared to accept lower numbers of weapons in the European military theatre than previously, without making any visible technological leap in the quality of Soviet weapons.

All over the world arms-producing companies are confronted with a situation in which their business interest may be critically endangered by political improvements. The way in which military equipment has been procured in the past has led to cyclical fluctuations in arms sales of companies with under-utilised capacities: layoffs in certain periods and booms in others. The present situation, however, is fundamentally different. Unless tensions increase or the cold war returns, the arms industrial base has to be substantially reduced in both Alliances. To what extent this reduction will be necessary, of course, will depend entirely on the magnitude of cuts in procurement. Since overcapacities already exist—with additional capacities in the stage of installation in third world countries and Japan— Governments in the West should seriously plan for conversion of parts of the arms industry; otherwise corporations may truly consider themselves “victims of peace”.

The countries of the two major Alliances and possibly also the neutral European countries face three basic economic tasks as a result of arms control or domestic pressures: first, the integration of soldiers and other personnel employed in the armed forces into the civil economy; secondly, the disposal of weapons withdrawn; and thirdly, the reorientation of arms research and production facilities to non-military use. The reduction of personnel costs results in more immediate savings from the military budget—although not from the state budget—than does the altering of equipment programmes. On the other hand, while job losses in the arms industry will be of the order of magnitude of hundreds of thousands, armed-forces personnel reductions (both military and civil) will be of the order of several million. Conversion on a substantial scale offers long-term opportunities for economic reform, but considerable problems will be encountered.

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THE EFFECTS OF MILITARY INDUSTRIALISATION IN LATIN AMERICA

One of the main problems in achieving any regional balance of military forces at lower levels has been, and continues to be, the proliferation of hi-tech weapons systems and the growing capacity for less-developed countries to produce them indigenously. The military industrialisation of Latin America and the development and production of missiles is a case in point. These developments have global as well as regional implications for security and disarmament measures. This linkage, and the difficulty in addressing the situation, was clearly expressed in a 1989 speech by United States President George Bush, who stated:

“... the security challenges we face today do not come from the East alone. The emergence of regional powers is rapidly changing the strategic landscape.... in our own hemisphere, a growing number of nations are acquiring advanced and highly destructive capabilities—in some cases, weapons of mass destruction and the means to deliver them.... Our task is clear: we must curb the proliferation of advanced weaponry; we must check the aggressive ambitions of renegade regimes; and we must enhance the ability of our friends to defend themselves.

We have not yet mastered the complex challenge.

We and our allies must construct a common strategy for stability in the developing world.”

The proliferation of such weapons has caused alarm in the West, which the Iraqi invasion of Kuwait exacerbated. Yet, the West has been instrumental in creating the existing conditions. Much of the technology and know-how have been obtained from purchasing advanced weaponry directly, licensing the rights to produce the armaments domestically, and entering into joint research and production agreements, all with the assistance and collaboration of Western

Governments and companies, although the West was by no means the only source available.

In the last two decades, developments in hi-tech weapons production have been swift. Regional security will be greatly destabilised if these developments are allowed to continue without regional control. Left unchecked, countries' capacities will continue to expand as they strive to acquire adequate defence. This legitimate objective creates an impetus which is not conducive to reduce force levels, which is how regional military balance is currently approached. Furthermore, Latin American countries will find it difficult to agree to reduce their technological capabilities in these areas if countries in the northern hemisphere continue to develop technologically and deploy these systems in the third world.

For these reasons, the issue of the transfer of hi-tech missiles to Latin America is part of an agenda concerning security and regional peace which should be considered by those wishing to establish regional security mechanisms to help create a new order of international peace.

In this article I shall analyse existing information concerning the development of some indigenous missile programmes in Argentina and Brazil—which have made the greatest strides in missile development—and identify the international support which has made these developments possible.

Argentina

In the 1960s and 1970s, Argentina led the countries of the third world in the field of rocket research, initially conducted with support from the United States. In 1974, the Instituto de Investigaciones Cientificas y Tecnicas de las Fuerzas Armadas (CITEFA) concluded work on its first successful missile project, the Mathogo anti-tank missile. The Mathogo incorporated foreign technology, and, given the missile's similarity to the Cobra missile, German technology was likely involved. An air-to-surface missile, the Martin Pescador, entered production in the early 1980s.

Missile development accelerated after the 1982 war in the South Atlantic. Some ballistic missile designs have been made public although none—as far as we know—is operational. The Argentine missile programme known as the Condor II has generated the most controversy and interest. The West's participation in, and reaction to, the project's development exemplify many of the dynamics and concerns which this paper addresses.

The Condor II surface-to-surface missile was apparently a development of a single-stage rocket called the Condor, which was tested in the early to mid-1980s. The Condor rocket was believed to have a 100-150 kilometre range. Several Western European defence contractors are believed to have assisted in the development of the Condor II missile and there is evidence that this cooperation continued even after some of these firms' countries joined the Missile Technology Control Regime. Companies named include: the German firms Messerschmitt-Bolkow-Blohm and Man & Wegmann, the Italian firm SNIA-BPD—a subsidiary of Fiat—the French firm Sagem and the Swedish firm Bofors.

Further efforts to ensure the project's success led Argentina to enter into a joint agreement with Egypt to produce the missile, where it was known as the Badr 2000. Iraq is understood to have financed part of this project, and there is considerable speculation as to what Iraq demanded and was promised in return for its financial assistance.

Development of the Condor II missile was never completed, however. Under strong pressure from the United States, Egypt bowed out of the project in 1989, and in May 1991 Argentina announced measures to be undertaken which would ensure that the Condor II missile programme would not be resurrected. (Although some reports had placed its range at 6,720-9,920 kilometres, there was a growing consensus that it had a range of no more than 800 kilometres.)

Over and above the ballistic missile programme, Argentina has been developing a family of remotely piloted vehicles (RPVs) based on the MQ-2 Bigua RPV, which Argentina produces under a licence granted by the Italian company Meteor. The Bigua may provide insights which could constitute the first stage in the development of a cruise missile.

Brazil

Brazil's missile programmes are more extensive and ambitious than Argentina's. During the 1970s the Centre Tecnico Aeronautico (CTA), later called the Centro Tecnologico Aeroespacial, undertook research and development of two missile designs: the MAS-1 Carcara air-to-surface-missile and the MAA-1 Piranha air-to-air-missile. Neither missile entered series production. A missile which did enter series production was the Cobra anti-tank missile, which was built under a 1976 licence granted by the Federal Republic of Germany.

Brazilian missile programmes gained importance in the mid-1980s. Missile research is conducted by two centres: the Institute de Actividades

Espaciales (IEA) and the Centro Tecnico Espacial (CTE). Production is undertaken by Avibras and Orbita and coordinated by a joint command of the Armed Forces.

In the early 1980s, Avibras began work on the SS-300, a ballistic missile with a range of 300 kilometres, similar to the Soviet Scud B. Longer-range missiles, designated the SS-600 and SS-1000 (with the numbers corresponding to the missile's range in kilometres), are also understood to be under development. Iraq is believed to have assisted in financing the project, which has yet to reach fruition.

Development of another series of ballistic missiles was undertaken in the latter half of the 1980s by Orbita. The missiles in this programme have been designated with the prefix MB/EE, but the numbers which precede the prefix do not necessarily correspond to the missile's planned range. The Libyan Arab Jamahiriya is believed to have participated in the programme's financing. Just as with the Avibras ballistic missiles, none of the planned Orbita missiles has progressed past the prototype stage into series production, and most are in various stages of research and development with no prototype having been constructed and tested.

Western military companies have been involved in many Brazilian missile programmes. The Cobra anti-tank missile built under a West German licence has already been mentioned. More recently, in 1987, British Aerospace joined the Brazilian firms Engesa and Orbita to develop a high-speed surface-to-air missile called the Thunderbolt or MSAAV, which was later suspended. The Italian firm Oto Melara is working with Orbita on developing an anti-tank missile called the MAF, which the Brazilian Army hopes to purchase under a modernisation plan to replace their aging Cobras.

Other systems are being developed, such as the SM-70 Barracuda cruise missile. This missile and a variant also under development and known by the same name are both designed primarily to attack ships, but differ in their platforms: one is to be part of a mobile shoreline defence system, the other is to be ship-borne. The Barracuda programme, which was frozen by Avibras in 1988 when the Brazilian Navy and the Air Force announced that they did not have the money to carry out the programme, apparently has been resurrected and development continues, providing resources can be allocated to the project—a questionable provision. The Barracuda could carry nuclear warheads and could be ready in the 1990s. The FOG-M (or MACMP), an anti-tank and anti-helicopter missile with a fibre optic guidance system and a maximum range of 10 kilometres, developed by Avibras in the

late 1980s, has passed preliminary tests in Avibras's unit 3 in Lorena (185 kilometres north-east of Sao Paulo).

Brazil's space programme, which appears to be peaceful in nature, nevertheless includes technologies and capabilities with military significance. For example, rockets used to power a space launch vehicle and put a satellite into orbit could just as easily power a missile carrying a more lethal payload. Making technologies available to developing countries for space programmes while simultaneously denying developing countries technologies for their missile programmes is a problem which does not lend itself to easy solutions. The Sonda series of sounding rockets (whose development has received West German assistance) has developed to the point where ranges approach 1,000 kilometres if used in a surface-to-surface mode. Technology from Sonda rocket development has helped Avibras develop military rockets and missiles. Avibras used the Sonda series as a basis for its Astros II artillery rockets.

Finally, we should mention the important role played by missile purchases in Brazil's industrial capacity, since the maintenance of such missiles is subsequently done locally. In certain instances Brazil has succeeded in going beyond repair and rehabilitation to substantially upgrading existing systems. For example, Ozilio Silva, a high executive officer of Embraer, reported that the Navy would modernise its Seacat surface-to-air missiles, which had been acquired 15 years earlier from the United Kingdom and placed on Niteroi class frigates.

Budgetary and technological constraints, and not political will, are largely responsible for many of these projects not progressing beyond the research and development and prototype stages into series production.

A limited domestic market has led to Brazil concentrating on exporting its weaponry to recover research and development costs and ensure economies of scale to make Brazilian arms attractive to potential export customers and thereby also less expensive for the Brazilian defence forces. Brazil, very successful in penetrating the third world armoured vehicles market beginning in the mid-1970s, also had success in marketing more sophisticated weaponry, such as the Astros II multiple launch rocket system, during the 1980s.

When the Iran-Iraq war ended in 1988, Brazilian exports to the two antagonists (both directly and through third parties) declined precipitously. Bills remain unpaid and Brazil is not likely to see the monies any time soon. The international embargo of arms to Iraq means

that Brazil has lost what was perhaps its biggest customer. Funding for its research programmes, which are believed to have relied heavily on Iraqi and Libyan support, has been severely cut back.

In addition, the election of a democratic Government and the increasing economic and financial difficulties of Brazil during a time of economic restructuring produced, not the collapse, but a dramatic slowdown of these programmes.

Conclusion

As the foregoing analysis has shown, the development of Latin American missile technology, in its more advanced stages, is relatively new and has been accelerating rapidly. This has been made possible by the supply of technology by developed countries, those same countries that, having seen the effects that such technology transfers have had, for instance in the case of Iraq, are now trying to reverse the trend. However, those countries' own conduct in the international arena and Latin America's legitimate desire for a credible defence have created a situation in which controlling such development becomes problematic.

This paper has dealt primarily with questions concerning technical and financial aspects of the development of missile programmes. We have seen that fluctuations in funding—specifically, the recent financial difficulties experienced by Brazil and Argentina—have caused numerous missile programmes to be abandoned or substantially delayed. Political considerations and the desire for a strong national defence based, at least in part, on not falling behind other nations in the region militarily, has been treated as a constant. This may no longer be the case.

The establishment of a new regional security order at a lower level of forces may be achieved if the most recent trends evident in initiatives taken by some Latin American Governments continue. In fact, the Mendoza Accord of 5 September 1991 (see the Documentation section), in which Argentina, Brazil and Chile pledged not to produce or stockpile chemical and biological weapons, followed the Foz do Iguacu Declaration of 28 November 1990 by Argentina and Brazil, in which they affirmed that they would not manufacture nuclear weapons and would enhance their cooperation in the peaceful uses of nuclear energy and redefine their relations *vis-a-vis* the International Atomic Energy Agency. The Mendoza agreement has since received the support of the Chilean President,

Patricio Aylwin. The Peruvian proposal of President Alberto Fujimori for a ban on weapons of mass destruction and a gradual

process of arms limitation in Latin America has been another step in the same direction. All these developments give reason to believe that efforts to prevent hi-tech weapon proliferation in the region may meet with greater success than in the recent past.

However, in spite of governmental endeavours to reduce the level of forces in the region, the autonomy reached by military institutions in almost all Latin American countries introduces some uncertainties into this process.

Although this article is not concerned with policy recommendations, it must be noted that the developments in rocketry discussed above make it urgent to draw up a realistic agenda for the multilateral, balanced and simultaneous reduction of forces at the regional level.

In view of the limitations of Governments and the regional nature of the debate, the role of the United Nations, its Regional Centre for Peace, Disarmament and Development in Lima, and other regional organisations, that specialise in drawing up proposals in this area, will be crucial.



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