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BONN INTERNATIONAL CENTER FOR CONVERSION · INTERNATIONALES KONVERSIONSZENTRUM BONN



report *1*

**Conversion
and the
Integration
of Economic
and Security
Dimensions**

january *95*

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The rapidity of change which greeted the end of the cold war has put a strain on the successful management of down-sizing of

Summary

defense budgets, armed forces and defense industry, and the practical reallocation of physical, financial and human capital. Initial attempts at conversion have faced various technical and financial constraints, as well as political and psychological barriers.

In this inaugural edition of the Bonn International Center for Conversion's report series, Edward J. Laurance and Herbert Wulf broadly address the issue of conversion by introducing into the debate two seemingly contradictory forces—expansion and focus. Articulating the need to expand the conceptual framework of conversion—to include not just industrial restructuring, but also the reallocation of financial resources, the reorientation of military research and development (R&D), the demobilization and reintegration of personnel (both military and civilian) employed by the armed forces, the reallocation of military bases and installations, and the alternative use or scrapping of surplus weaponry—the authors also seek to bring to bear a focused and pragmatic application of available resources to tackle this daunting range of tasks by integrating security, economic and social dimensions.

The aforementioned six areas of conversion are, at the same time, those areas which form the basis for BICC's research, information and project management services.

Cover photo:
***Dismantlement of former
Soviet strategic bombers.***



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Conversion and the Integration of Economic and Security Dimensions

*by Edward J. Laurance and Herbert Wulf
with the assistance of Joseph DiChiaro III*

january *95*

Zusammenfassung

Summary

in German

Die weitreichenden Veränderungen der weltpolitischen Lage haben einen Großteil der angehäuften militärischen Arsenale obsolet werden lassen. Militärische Einrichtungen werden geschlossen, überschüssige Waffensysteme entsorgt oder exportiert, rüstungstechnische Entwicklungsarbeiten gedrosselt, Aufträge für neue Waffensysteme gekürzt, Armeen demobilisiert und Rüstungsarbeiter entlassen. Noch vor wenigen Jahren beschäftigte sich nur ein kleiner Kreis von Experten ernsthaft mit dem Abbau von Militär und Rüstung. Die Diskussion blieb auf wissenschaftliche Studien beschränkt, die politische Debatte war eher rhetorisch zu verstehen und blieb ohne praktische Auswirkungen. Die waffenproduzierende Industrie und das Militär sahen die möglichen Folgen von Rüstungskontroll- und Abrüstungsvereinbarungen allenfalls in einer fernen Zukunft auf sich zukommen und die Gemeinden und Städte konnten sich nur selten vorstellen, die in ihrer Umgebung stationierten Soldaten abziehen zu sehen.

Diese Situation hat sich grundlegend geändert; die Erfahrungen mit Konversion haben gezeigt, daß die Umstellung nicht einfach und daß ein umfassendes Konzept von Konversion erforderlich ist:

Erstens beinhaltet Konversion mehr als nur die Umorientierung der Rüstungsindustrie: das Umwidmen der Finanzen aus den Militärhaushalten, die Umorientierung militärischer und rüstungstechnologischer Forschung und Entwicklung, die Demobilisierung von Soldaten und ihre Reintegration in die zivile Gesellschaft, die alternative Nutzung von Kasernen, Liegenschaften und anderen militärischen Infrastruktureinrichtungen sowie die zivile Verwendung oder Verschrottung mili-

tärischen Geräts. Die Erweiterung der Konversionsdebatte und -praxis ist Voraussetzung, um die mit Abrüstung und Rüstungskontrolle verbundenen Langzeitprobleme zu lösen.

Zweitens sind die Ziele und der Fokus von Konversion – Finanzen, Militärbasen, Rüstungsindustrie, Waffen, Armeen usw. – häufig das Ergebnis von nationalen und internationalen Entscheidungen im Bereich der Sicherheits- und Friedenspolitik. In der Praxis wird Konversion hingegen in der Regel auf der Ebene des Einzelbetriebs, in Gemeinden und Städten oder regional durchgeführt; die wirtschaftlichen und sozialen Folgen von Abrüstung und Konversion sind vor allem lokal zu spüren. Konversion muß, soll sie erfolgreich sein, langfristig international orientiert sein.

Drittens sind sämtliche Konversionsaktivitäten sehr entscheidend ökonomisch beeinflußt. Der Wandel der sicherheitspolitischen Verhältnisse hat Abrüstungstendenzen und Rüstungskontrolle zwar ermöglicht, beschleunigt wurden sie aber im Westen von der Finanznot der Öffentlichen Haushalte und im Osten und in den meisten Entwicklungsländern von den allgemein schlechten Wirtschaftsbedingungen. Rüstungskontrolle und Abrüstung haben sowohl positive wie auch negative wirtschaftliche Folgen. Im militärischen Sektor werden weniger Ressourcen benötigt; prinzipiell stehen damit die Einsparungen für andere, nichtmilitärische Aufgaben zur Verfügung. Kurzfristig dominieren aber die Probleme. Denn Abrüstung hat nicht nur zur Einsparung von Mitteln in Militärhaushalten geführt; Abrüstung kostet auch Geld und führt zur Einschränkung wirtschaftlicher Aktivitäten. Kurz- und mittelfristig fallen Kosten an, die

Abrüstungs- und Demilitarisierungsprozesse behindern können. Langfristig jedoch stellen Aufwendungen etwa für die Umschulung von Personal, die Sanierung von Rüstungsaltslasten oder die Verschrottung von Waffen eine bedeutende Investition in die Zukunft dar.

Viertens ist eine stärkere funktionale institutionelle Koordinierung der wirtschaftlichen, sozialen, friedens- und sicherheitspolitischen Elemente der Konversion erforderlich: dies gilt für die verschiedenen Akteure im Konversionsprozeß innerhalb von Staaten, zwischen Staaten, im internationalen Wirtschaftssystem und auch in der sich verändernden internationalen Friedens- und Sicherheitspolitik - vor allem bezogen auf die friedenserhaltende und friedenssichernde Rolle der Vereinten Nationen.

Konversion bedeutet das aktive Management der Abrüstung und Demilitarisierung. Konversion soll durch die praktische Umsetzung von Abrüstung und Demilitarisierung den notwendigen Transformationsprozeß beschleunigen und damit die Umstellungszeit verkürzen und die entstehenden Kosten mindern. Es gilt, sich einen Überblick über Konversionserfordernisse zu verschaffen, Anreize für die Umstellung auf zivile Fertigung zu schaffen und durch Qualifizierungsmaßnahmen Perspektiven für die Beschäftigten im Militärsektor zu eröffnen. Durch die Einsparung von Ressourcen im Militärsektor sollen langfristig für die Gesellschaft Erträge anfallen und die Friedensdividen den ausgeschüttet werden.

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Introduction:

The imperative of conversion

There is little doubt that the demilitarization of national economies and military infrastructures is in full bloom. The end of the cold war has seen national defense budgets and arms exports plummet since the late 1980s, resulting in a reduced demand for defense products, demobilization of millions of soldiers, closures of excess military bases and the generation of thousands of pieces of surplus military hardware. The sheer magnitude and rapidity of this change in the international environment has ensured that the focus on conversion—defined here as the operational process of demilitarization and the practical management of disarmament—has proceeded apace. This can be seen in the explosion of studies and publications, conferences and consulting firms advising those national governments faced with critical conversion problems.

The explanation for this surge of activity is clear. With the disappearance of an international security system based on two ideologically opposed superpowers went a very expensive arms race and an alliance system based on perceptions of a major threat. The new era has also seen the elimination of one of the superpowers, leaving the United States with by far the highest defense budget and volume of arms exports.

With the end of the cold war, conversion and demilitarization of national economies and military infrastructure has moved quickly from theory to reality. While this process is not always organized effectively nor undertaken in a rational fashion, conversion has become a self-evident topic for discussion and action (United Nations, 1991; Renner, 1992; Brunn, Baehr and Karpe, 1992).

Two notions about conversion are often voiced: First, that conversion does not work. Despite many success stories, the celebrated failures, especially at the level of converting large defense industrial plants to civilian production, have resulted in a rise in the pessimistic view that conversion cannot succeed. Often, reductions of military activities are implemented haphazardly. In other cases policies have been implemented top-down without appropriate consideration of the economic and social conditions in which the down-sizing takes place. Yet the often-quoted example of a state-of-the-art missile factory switching to the production of simple prams or kitchen knives and then running into financial difficulties is not proof of the failure of conversion, but rather of ill-conceived policies. It should be no surprise that failures—which are usually featured prominently in the media—occurred while the systematic reform and subtle transformation taking place remained unnoticed by the wider public.

Second, the down-sizing of military activities is often seen as a short-term trend. In other words, since the problem will quickly be overcome, conversion is hardly worth pursuing. The popular notions that conversion does not work or is not needed cannot be the definitive answers to a problem which is likely to stay with us for decades to come. To cite but one example, the clean-up of highly contaminated military sites in order that they become available for alternative use is going to take decades rather than years to implement.

The question is not whether conversion has failed and the conclusion cannot be that conversion is not worth pursuing. For the past several

years, the reality in the military sector has been a gradual but steady and substantial drawdown. The alternatives are to let this reduction happen irrespective of the social, economic, political, financial and ecological consequences, or to cushion this process by an intelligently applied conversion program.

The key to successful conversion is the realization by states that resources currently being spent on military affairs can be better spent on civilian endeavors. Both the failures of conversion projects and the backlash in public perception highlight the need for a more integrated approach which addresses four major elements of the conversion process:

First, although most countries of the world and many different sectors of the economy are affected, the debate over conversion—whether, when, and how to do it—is usually narrowly confined to conversion of the arms industry in industrialized countries (Hartley et al., 1991; Chatterji and Brauer, 1991). While this is understandable given the major resources invested in this sector, the issues and needs involved are much wider. This broader conversion agenda includes reallocating finances, reorienting research and development, restructuring industry, reintegrating personnel, alternative use of military bases and installations, and dismantling, reusing or scrapping surplus weapons. The broadening of the conversion debate and practice to include all six of these dimensions is a critical step in generating the level of attention and resources required to deal with the problem over the longer term.

Second, the commodities and activities which are the focus of the conversion effort—military bases, weapons, defense budgets, etc.—are the product of national and international decisions related to security.

Accordingly, the conversion effort must in some way be related to the security concerns of states within which the conversion actually occurs. However, most of the post-cold war conversion efforts to date do not stem from the formulation of arms control and disarmament policies or from a conscious assessment of national and international security. Because the change in the international system was so drastic and required little interpretation, minimal attention was paid to the nature of the linkages between the international security system and the conversion efforts taking place at the national level; but it is obvious that these linkages are real and must be addressed. As prime examples, three cases—the partial dismantling of the Russian military-industrial complex, the issue of control over nuclear weapons in the newly emerged states of the former Soviet Union, and the many developing countries that have demobilized hundreds of thousands of soldiers without systematic reintegration or retraining programs—represent conversion challenges and needs generated by a shifting international security environment. The international security element in these and most other cases is important because increases in interstate tension, real or perceived, might reverse the process of down-sizing military activities. In the short to medium term, conversion takes place within national boundaries based on local, regional or national governments acting in their own interests. In the longer run, however, conversion is necessarily tied to the perception of threats to national security and global security factors must be integrated into the conversion effort.

Third, all six dimensions of the conversion effort are also related in a critical way to economics. As with security, in the short term the economic dimension of conversion may be of purely local or national concern. This can be seen as states make decisions to reduce military expenditures and shrink military activities primarily as a result of short-term budgetary concerns and constraints flowing from poor eco-

conomic conditions, rather than the result of changed security policies. Today, finance ministries rather than defense ministries have the decisive impact on military force structures. The financial constraints have led to policies which do not effectively manage the drawdown. Since the shrinkage is not based on a rational security, arms control, disarmament or peace policy, but rather on a piecemeal approach to cope with economic difficulties, the possibility of improved economies may reverse the momentum towards conversion. Disarmament has major social and economic effects, involving both costs and benefits. To succeed, conversion must be seen as an investment for future development. As with security, economics is a critical element in the conversion process and the effects of a global economy must be integrated into the effort.

Fourth, there is a need for a more functional and institutional linking of the economic, social and security elements of the conversion process, especially among states and between states and the evolving international security and economic system. The magnitude of conversion now underway is unprecedented in modern history. To succeed, economic, social and security interests within countries must coordinate their efforts. Since conversion is truly a global issue, states must interact and coordinate their policies if the investment is to come to fruition.

These four elements of the conversion process are the focus of this paper.

►
***Preparing medium-range
missiles for destruction under
INF Treaty, Kazakhstan***

►►
***Former Soviet vehicles
scrapped near Berlin***



Broadening the focus of conversion

Four years into the post-cold war era, the magnitude and breadth of the conversion effort has become much clearer. The impact of the military system—a system that has been deeply rooted across many sectors in many societies—has been so great that the adjustment process will take several decades, rather than merely a few years, to manage. As shown in the summary 'profile of adjustment strategies' below, conversion is only at an early stage in most countries. The problems of demilitarization and disarmament are so overwhelming, particularly in poor economies, that systematic and multi-dimensional conversion programs are required. Such programs have not been developed on a large scale and are only now beginning to be formulated (United States Department of Defense, 1992; Izyumov, 1993).

As can also be seen in this 'profile,' conversion involves much more than non-military production in the defense industry. It encompasses a

much broader range of issues. The following discussion focuses on six dimensions which can serve as the focus for the planning, development and implementation of systematic programs of conversion which are realistic and maximize the potential for success.

Reallocation of financial resources

The long-term growth of military spending has been stopped and, in the more benign security environment, military budgets have fallen in real terms. The decline that began in 1988 has continued uninterrupted and in 1993 apparently accelerated in a few countries. Compared to the fundamental political changes—unprecedented since the end of colonialism—and the new non-military challenges in Eastern Europe, the Commonwealth of Independent States (CIS) and the developing countries, disarmament and reductions in armed forces have been

modest so far. World military expenditure was reduced by an estimated 3.8 per cent annually, from a total of nearly US \$1,000 billion in 1987 to approximately US \$815 billion in 1992.

NATO countries—although having reduced procurement expenditures from their peak in 1987—have spent roughly the same amount on the procurement of military equipment in 1992 as they did a decade ago during the height of the cold war.

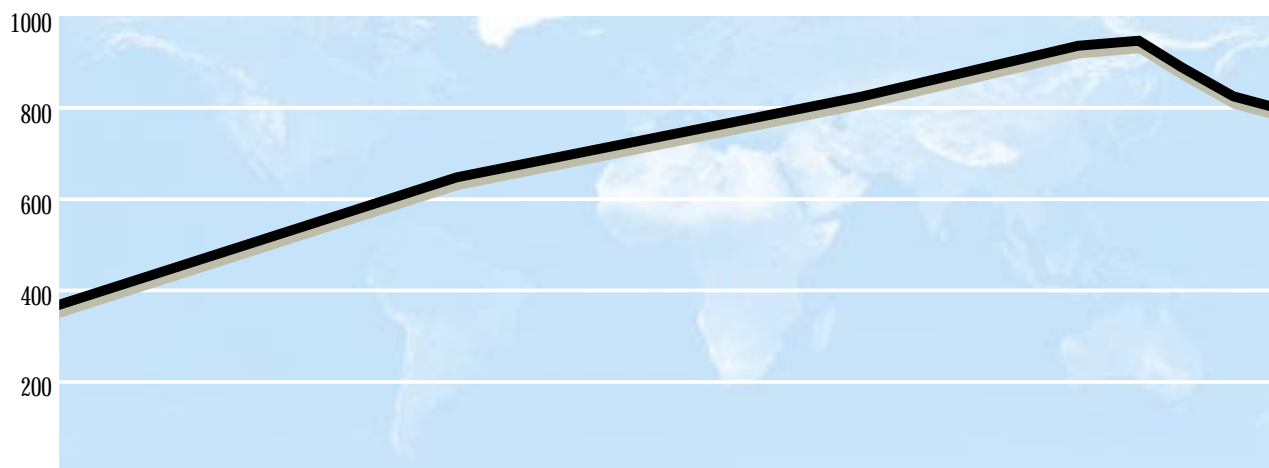
Budgets in the NATO countries are shrinking only gradually. They accounted for roughly 60 per cent, or about US \$490 billion, of world military expenditures in 1992. Only three of the 16 NATO countries (Belgium, Canada and the UK) actually reduced their military expenditures in 1992 (in nominal terms, i.e., without adjusting for inflation). In real terms NATO countries' total military expenditure remained stable at the 1991 level—although substantial cuts are to be expected in the future. The experience in the West of the past five years has been that savings in military budgets have been soaked up in national accounts as a budget-balancing item that reduces, or prevents, deficit spending. While this

Development of world military expenditure, 1960 - 1992 Figures in US \$b

Sources: Authors' estimates based on SIPRI Yearbook: World Armaments and Disarmament (Oxford: Oxford University Press, various annual editions); NATO, Financial and Economic Data Relating to

NATO Defense (Brussels: NATO, annual publication); US Arms Control and Disarmament Agency, World Military Expenditures and Arms Transfers (Washington, DC: US Government Printing

Office, several issues); United Nations Development Program, Human Development Report 1992 (Oxford: Oxford University Press, 1992).





TASS-FotoKhron/dpa

money is not available for development aid or conversion programs, from an economic perspective it should not raise too much concern, for the alternative might have been cuts in domestic programs or foreign assistance budgets.

In non-NATO industrialized countries, the trends in military expenditures varied greatly. Apparently the Central and East European countries as well as the CIS countries had to reduce their military expenditure;

some of them took drastic measures, out of economic necessity, to free scarce resources from the military sector. Other countries in this group (such as Australia, China and Japan) increased their military expenditures. It is estimated here that the aggregated military expenditure in this group fell by about 15 per cent in 1992 to approximately US \$200 billion. It should be again underlined that these figures are at best rough estimates. It is next to impossible to convert the military spend-

ing of some of the countries in this group into comparable US dollars. This group of countries spent about US \$300 billion in 1987. In Russia and other former Soviet republics drastic cuts in military expenditures have been made out of economic necessity. The saved financial resources have not become effectively available, but have simply been lost in the chaotic economic situation of hyper-inflation and de facto permanent devaluation of currencies.

Profile of adjustment areas and strategies in 1994

Key: 0=zero, 1= small or unimportant, 2=medium, 3=large or important, -- not applicable.

Note: The grading is based on the authors' judgment.

	USA	Russia	Eastern Europe	Western Europe	China	Developing Countries
Military budget cuts	2	3	3	1	0	1
Military R&D cuts	1	3	-	2	0	-
Industrial adjustment strategies						
- cuts in employment	3	2	3	3	0	1
- closure of plants	2	1	2	1	0	1
- non-military production	1	2	2	2	3	2
- internationalization	1	1	1	2	0	0
- concentration	2	0	0	2	0	0
- arms exports						
-- planned	3	3	3	2	3	2
-- effective	2	1	1	1	1	1
- conversion						
-- planned	3	3	3	1	3	1
-- operational	1	1	1	1	3	1
Demobilization of armed forces	3	3	3	3	0	2
Re-integration programs for demobilized personnel	2	1	1	2	0	2
Base closure	3	3	2	2	0	1
Base adjustment programs	3	0	0	2	0	0
Economic effects						
- regional	2	2	3	2	0	2
- sectorial	1	3	2	1	0	1
- macro-economic	1	3	2	0	0	1

In the developing world there are significant fluctuations in the trend of military expenditure. Overall, the trend has been one of gradual reductions that began earlier than in the industrialized countries. A number of countries in the Middle East (mainly as a reaction to the Iraqi aggression against Kuwait), several ASEAN (Association of South East Asian Nations) countries and other Asian countries (such as Myanmar and Taiwan) increased their military expenditure. In total, the share of military spending in the developing countries remains in the order of magnitude of 15 per cent of global military expenditure.

With military expenditure rising in a few Asian countries and NATO military expenditures stable at the 1991 level, and in the absence of precise empirical data, we assume here that the overall trend of reduction over the past four years has only slightly accelerated; thus an estimated reduction from US \$855 billion in

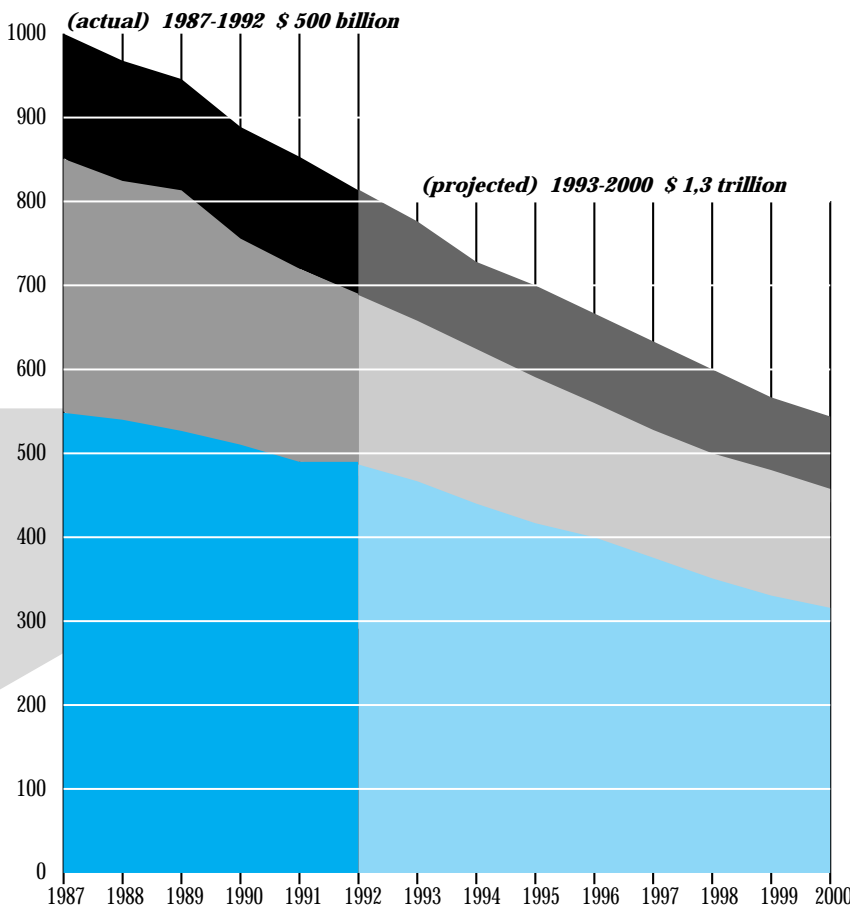
1991 to US \$815 billion (4.7 per cent) is assumed in our calculations.

Conversion can contribute to fostering the disarmament process and strengthening the political will to reallocate financial resources to non-military use. Military budgets are a major source for resource mobilization, and a peace dividend of around US \$1,300 billion can be realized—assuming a modest 5 per cent annual reduction of military expenditures—by the year 2000. If the process of disarmament continues, there is a substantial potential for savings of military expenditure especially in the rich NATO and European Community (EC) countries: the potential savings between 1993 and the year 2000 amount to over US \$750 billion in NATO countries or approximately US \$275 billion in EC countries. The true peace dividend, however, is not simply the amount of money saved in the military budgets or in shifting it from one pocket to another. Rather, it is

the opportunity to reallocate substantial resources to other productive activities.

Reorientation of military research and development

Military research and development (R&D) was at the heart of the technological arms race between East and West and still plays an important role in the modernization of armaments. Although detailed comparative figures on R&D are not publicly available, it is undisputed that military R&D is a major employer of scientific and technical personnel. Of the 5–7 million persons engaged in R&D world-wide in 1990, approximately 1.5 million were working in the military sector (Thee, 1990). At that time military R&D expenditures amounted to an estimated 12 per cent of total mili-



Military expenditure (1987-1992) and the peace dividend actual and projected
Figures in US \$b

Source: Authors' calculations; sources as for figure on page 7.

Developing countries

Other industrialized countries

NATO

tary expenditures, thus equaling about US \$110 billion world-wide. About 80 per cent of the finances and personnel involved were accounted for during the cold war period by the United States and the USSR alone. The significant change since 1990, as a result of the collapse of the Soviet Union, has been a drastic reduction of the former Soviet Union's military R&D (De Andreis and Calogero, 1993; United States Congress, Office of Technology Assessment, 1994).

A number of Western countries also had to reduce their military R&D spending because of budget constraints. Changes in military R&D priorities of a select number of OECD (Organization for Economic Cooperation and Development) countries are reflected in the figure below. In contrast to procurement expenditures for weapon production, which fell significantly, cuts in R&D expenditure were moderate. This trend is the result of a policy of trying to maintain the capacity to develop state-of-the-art weapon systems while reducing the weapon building rate (Adams and Kosiak, 1993; United States Congress, Office of Technology Assessment, 1993).

Military R&D has produced "spin-off" to the civil sector and is often seen as a means of promoting the high-technology sectors of the eco-

nomy as a whole, thus increasing technological competitiveness. Although it is difficult to generalize, it is assumed that investing in military R&D is not the most efficient method of promoting civil technologies (Gummett and Reppy, 1988). Military R&D also absorbs scarce human and material resources. Critics claim that military R&D crowds out investment in civilian R&D by depriving it of qualified scientists and engineers and scarce funding. Opportunity costs are also high. The empirical evidence for the crowding-out hypothesis is limited. In a fully employed economy the competition between the military and civil sector will lead to some crowding out. If resources are under-employed, the effect is not so clearly evident.

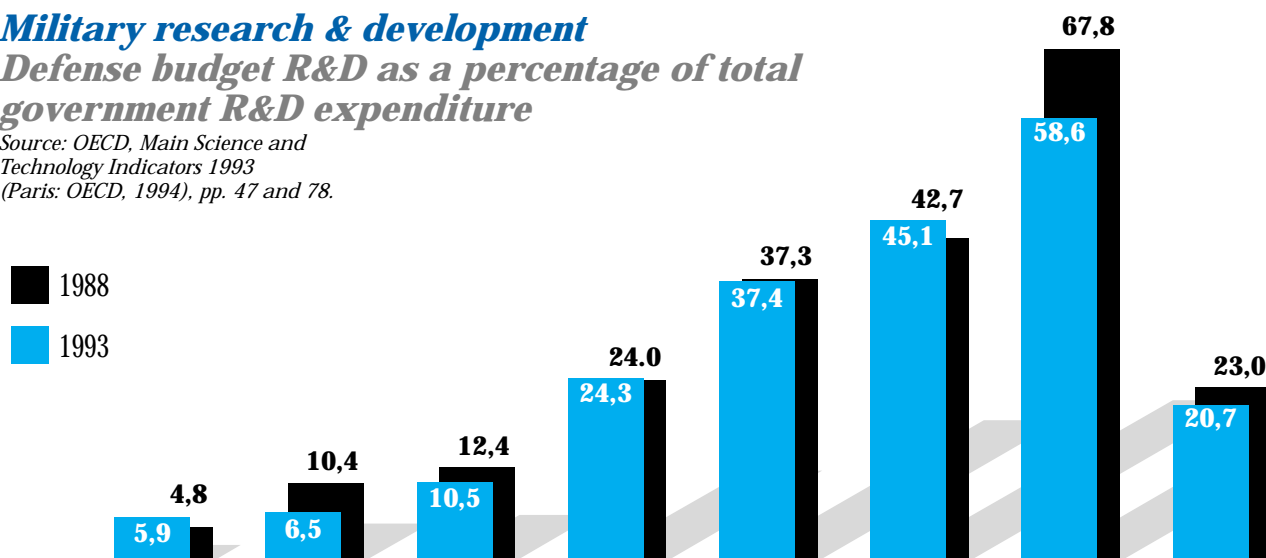
Military R&D in many countries is often secret, with access to information by the public and by scientists and engineers in other fields either controlled or prevented. Secrecy, techniques for concealing sensitive scientific results, and national security concerns limit possible positive interrelations between the civilian and military sector. Furthermore, the highly specialized nature of military R&D makes the transfer to non-military applications difficult. Arcane military specifications limit the use of military R&D in other areas. A number of barriers exist to smooth

The attraction of military R&D to scientists and engineers in the past has been the technical challenge posed and the ample resources available. With this incentive in decline there is an opportunity to restructure the allocation of scientific resources away from military uses.

reorientation of military R&D teams and facilities. It is claimed that personnel are spoiled for civilian work, mainly because of a lack of concern about costs in military R&D and an ignorance of civilian markets. Furthermore, the locations of R&D facilities are often and purposely

Military research & development *Defense budget R&D as a percentage of total government R&D expenditure*

Source: OECD, *Main Science and Technology Indicators 1993* (Paris: OECD, 1994), pp. 47 and 78.



physically remote from large population centers. Military R&D has become highly concentrated in certain locations.

As R&D efforts are slowing down, governments and industry are anxious about the possible loss of potential for developing modern weapon systems. It has therefore been suggested, especially in the United States, that military R&D facilities be mothballed. The alternative to mothballing facilities and maintaining skeleton staffs that continue to have as their primary mission the development of new weapons, is either to close the facilities entirely or to provide new missions in the civilian sector that would absorb the scientific and engineering manpower into long-term projects. Scientific knowledge and technical know-how are being freed from the military sector. Old and new challenges of global proportions can be tackled if, instead of being wasted, this knowledge and creativity is made available for non-military purposes. There are basically four options for military R&D facilities, each with different consequences: (1) continued funding with the aim of gradually diversifying into non-military R&D—although there is still concern that these facilities would revert to military work; (2) giving R&D facilities entirely civilian tasks, i.e., systematic and complete con-

version; (3) disbanding the facilities irrespective of employment and the other economic effects involved; and (4) mothballing facilities and maintaining skeleton staffs that continue to have as their primary mission the development of new weapons.

Programs for reorientation of military R&D can contribute in a number of different fields, including two of the major global challenges: underdevelopment and environmental pollution.

Conversion of industry

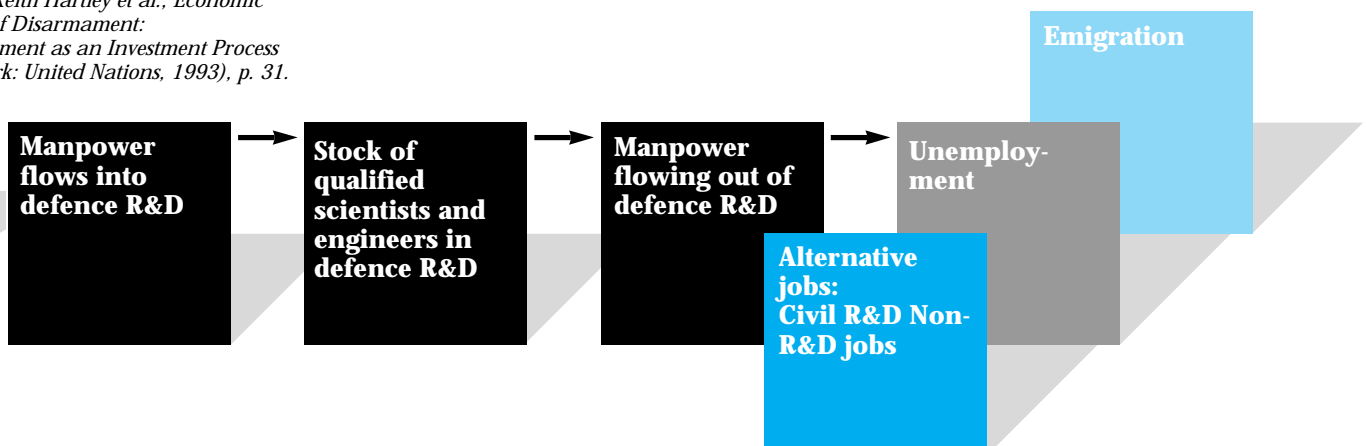
Within the past five or six years, the arms industry has rapidly reached a situation in which radical 'downsizing' of arms production capacities is required. The arms industry has reached its limit under the present political and economic conditions. Reduced arms production and large over-capacities are a consequence of military budget cuts. The process of reductions has begun and major conversion efforts are required both in the short and medium term. It would be unrealistic to predict a repeat of the cyclical pattern of ever-increasing procurement of the past.

Arms industry employment world-wide fluctuated during the 1980s at around 15 million employees. The peak in arms industry employment was reached in the mid-1980s, at around 16 million jobs (Wulf, 1993, pp. 3–26). Employment cuts began to be implemented mainly in the United States (Reppy, 1993; Bitzinger, 1993) and were experienced with a brief time lag in Western Europe as well. Redundancies can be expected to be more severe in the future (particularly in Russia). It was projected in 1992 that, of the then 15 million jobs in the arms industry world-wide, 3–4 million jobs might be lost between 1993 and 1998. Taking into consideration the experience of the past two years this projection might even be too conservative. Depending on developments in Russia and other former Soviet republics, this figure might be higher, since most of the 5.9 million employees of the arms industry have not yet found alternative employment (Cooper, 1993).

It is important to distinguish between job losses and unemployment. Job losses represent temporary dislocations—which typically last for a number of months—but they are not the real economic problem if other job vacancies exist. Unemployment is the problem. The magnitude of arms industry employment creates long-term problems

Reallocating scientific manpower

Source: Keith Hartley et al., *Economic Aspects of Disarmament: Disarmament as an Investment Process* (New York: United Nations, 1993), p. 31.



jobs lost

only in a small number of countries, particularly in Russia and Ukraine, and to some extent also in the United States, France and the United Kingdom. In most other countries job losses in the arms industry are temporary and marginal in macro-economic terms. However, it often remains a regional problem (Pauker and Richards, 1991).

Of all the countries in the world, the process in the former Soviet republics is probably the most fundamental. The changes have not only entailed quantitative reductions, as in many other countries, but have also taken place while the entire economy is in turmoil. The political collapse of the former system and the ensuing economic chaos prevented successful conversion of the arms industry to civilian production. With limited possibilities for non-military production, many arms-producing facilities are in great difficulties—although every tank, ship or aircraft not produced is a gain for the economic well-being of the country as a whole.

The arms industry in the United States has been faced with cuts in procurement and research and development expenditures since 1986. Companies have reacted with massive lay-offs and closure or sale of plants. However, US weapon exports have not declined much. At

the government policy level, there is an inherent conflict between plans to cut procurement and R&D expenditure and plans to maintain a viable and competitive defense industrial base.

The experience in China has been different. The Chinese Government is sending mixed signals to the international community about its arms production. Military expenditure has been increased recently, and at the same time the Government announced the success of industry conversion. Conversion in China means guns and butter—quantitative reductions and modernization of weapons and industry simultaneously.

The process of shrinkage in Europe has begun with a time lag when compared to the United States. Arms industry responses in Western Europe are occurring in a difficult, although more benign, economic environment than in Russia and the East European states. Despite a number of cooperative arrangements, arms production and arms industrial policy in Western Europe is still largely decided at the national level with consequences of ineffective production and duplication in procurement.

The recent experience of the arms industry in Poland, the Czech Republic and Slovakia is closely lin-

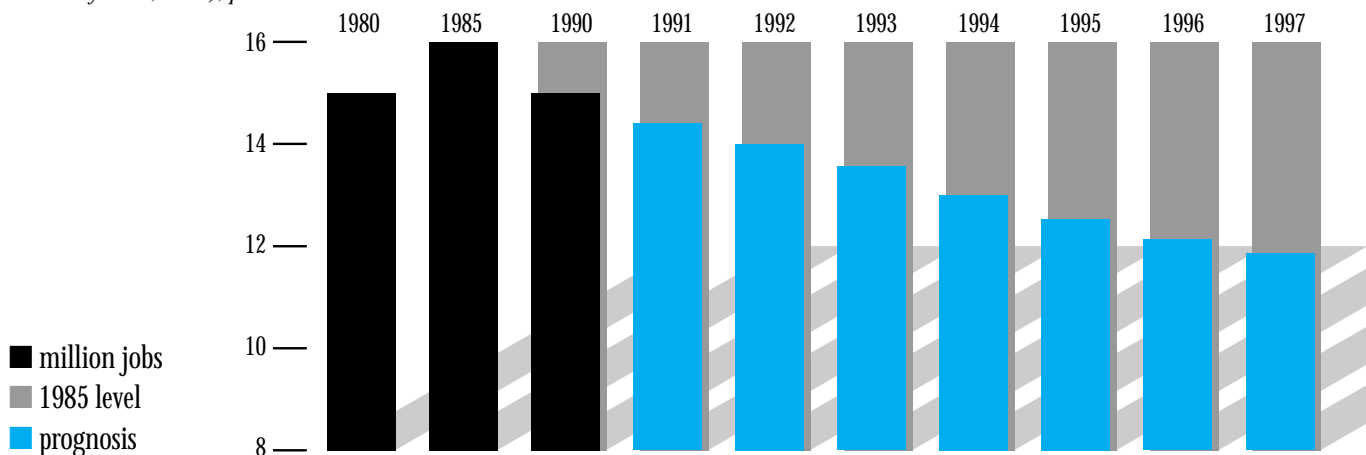
ked to the dissolution of the Warsaw Treaty Organization (WTO) and is similar to the fate of the industry in Russia, although on a totally different quantitative level. Drastic cuts in employment and major industrial restructuring have been implemented owing to the breakdown of the division of labor in the former WTO, a substantial reduction in domestic demand and a shrinking arms export market.

Overall, the effects on arms production and arms-producing companies have varied greatly. While severe cuts in arms procurement and arms production were made in some countries, a gradual process has just begun in others. However, there are also developments in the opposite direction. Governments in some countries—Australia, China, Japan, South Korea, Taiwan and Turkey—have made long-term commitments and have decided to retain or even expand their arms industrial bases at a time when over-capacities are an economic and political burden in global terms.

The value of exports of major conventional weapon systems declined for five consecutive years after 1987 and seems to have stabilized at this lower level in 1993. Scarce hard currency reserves in many countries and increased expansion of indigenous arms production facilities have

Employment in the arms industry *Figures in m*

Source: Herbert Wulf (ed.), *Arms Industry Limited* (Oxford: SIPRI/Oxford University Press, 1993), p. 17.



Companies are reacting to the new environment with a variety of strategies. Some companies are selling their production facilities and leaving the defense business entirely. Others try to diversify in order to reduce dependence on arms production and lay off employees. The larger contractors are teaming together to share the remaining contracts, often at the expense of the smaller producers. Others are buying up competitors, thus further diminishing competition. Some producers have specialized in certain niches of the defense budget that were not affected by cuts.

Despite the fact that in the short term arms industries are trying desperately to export the surplus generated by declining domestic defense expenditures, in the long term expanding arms exports is not a viable alternative for the arms industry as a whole. Only in exceptional cases do arms exports ease the economic situation of the military industry. Changing conditions in the international arms market are making it more difficult to export the same volume of weapons.

contributed to the downward trend in arms exports. As a consequence of arms control agreements and disarmament in Europe, some governments are trying to 'unload' surplus arms, thus saturating the arms market. Arms-producing companies are often in direct competition with these surplus weapons for their sales.

Declining trade in conventional weapon systems is but one side of the coin. Military and political ambitions have contributed to an increased flow of technologies, the proliferation of knowledge to produce modern weapons in more countries and, thus, difficulties in restricting proliferation (Brzoska, 1993).

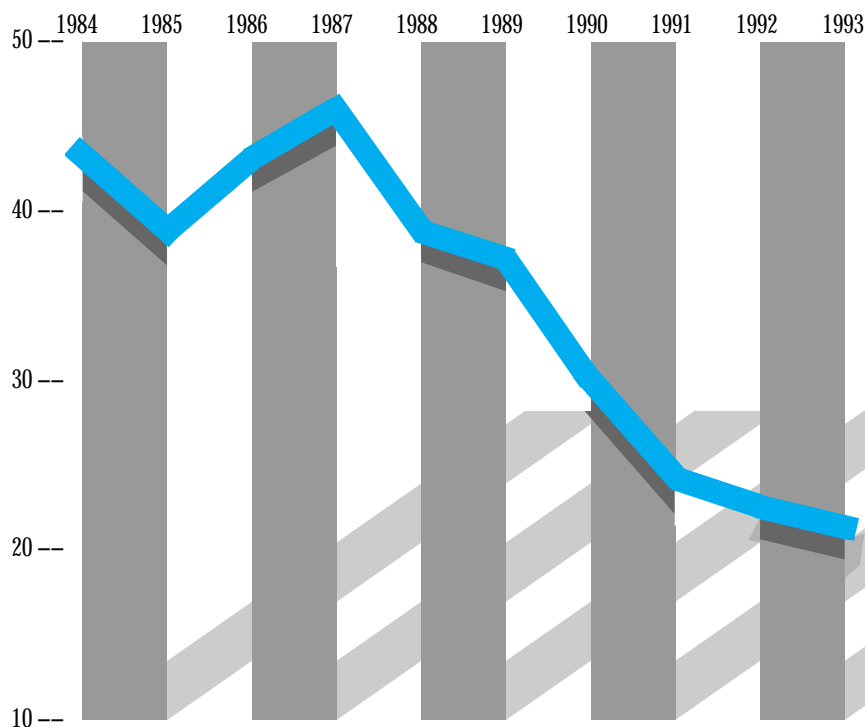
The process of transformation of the arms industry has several dimensions. Increasing internationalization is one of them. Previously, arms-producing companies operated mainly at the national level.

Transnational companies in the arms sector—in contrast to other industrial branches—were rare exceptions. The changed economic and political climate has fostered the process of company internationalization, particularly cross-border mergers and acquisitions. This process will have important arms control implications and will complicate arms trade restrictions (Sköns, 1993; Walker and Gummert, 1993).

Domestic politics are important, especially when they revolve around jobs. But it is also clear that conversion issues, such as the one described above, also take on international dimensions. The challenge to conversion is particularly great when the domestic arguments are both powerful and supported by public opinion. Most publics are unaware of concepts such as 'burden sharing' and 'collective security,' making arguments in this area all the more difficult to put forward convincingly.

Transfer of major conventional weapons
Figures in US \$m, at constant 1990 prices

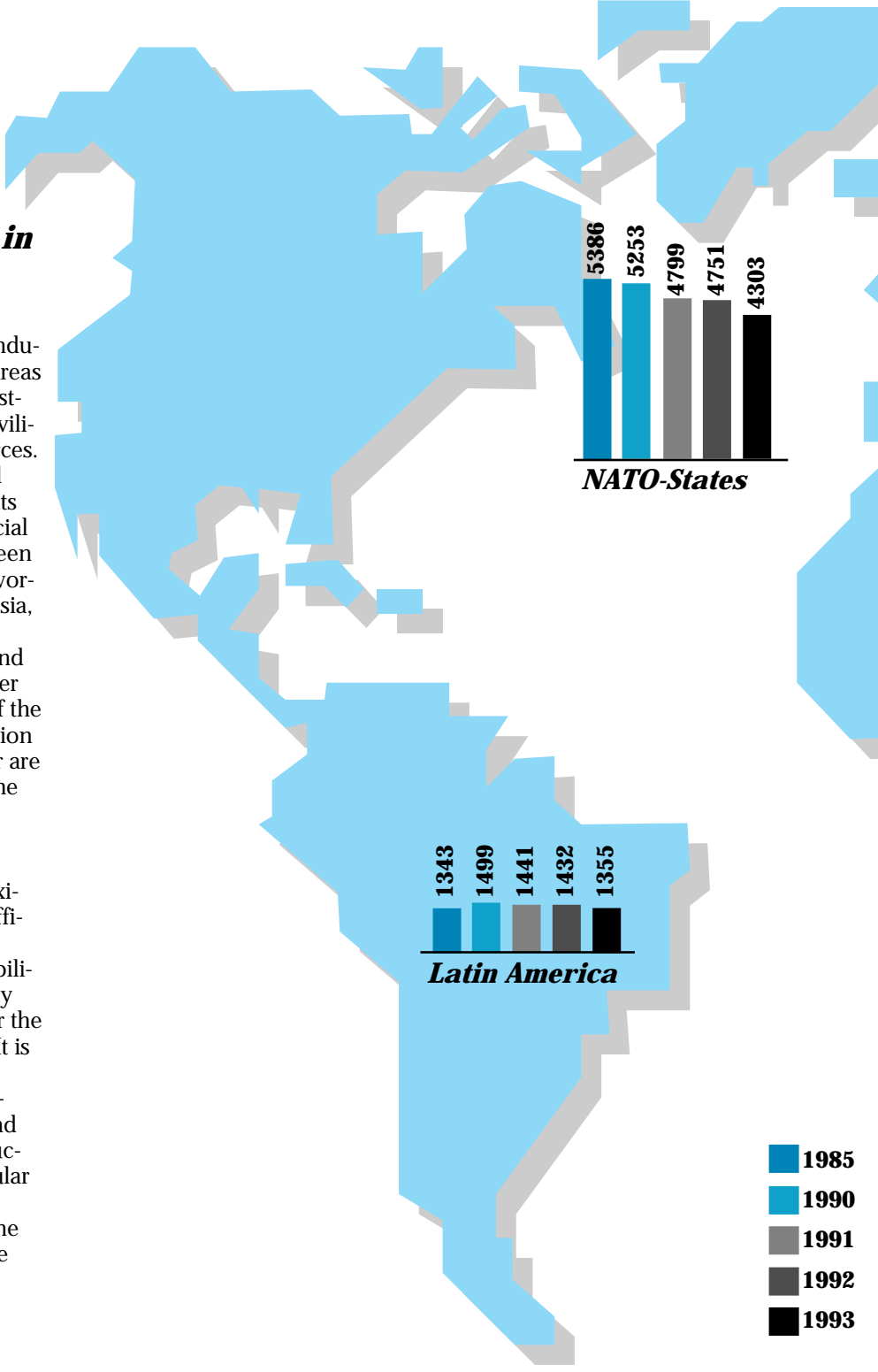
Source: SIPRI Yearbook 1994 (Oxford: SIPRI/Oxford University Press, 1994), p. 457.

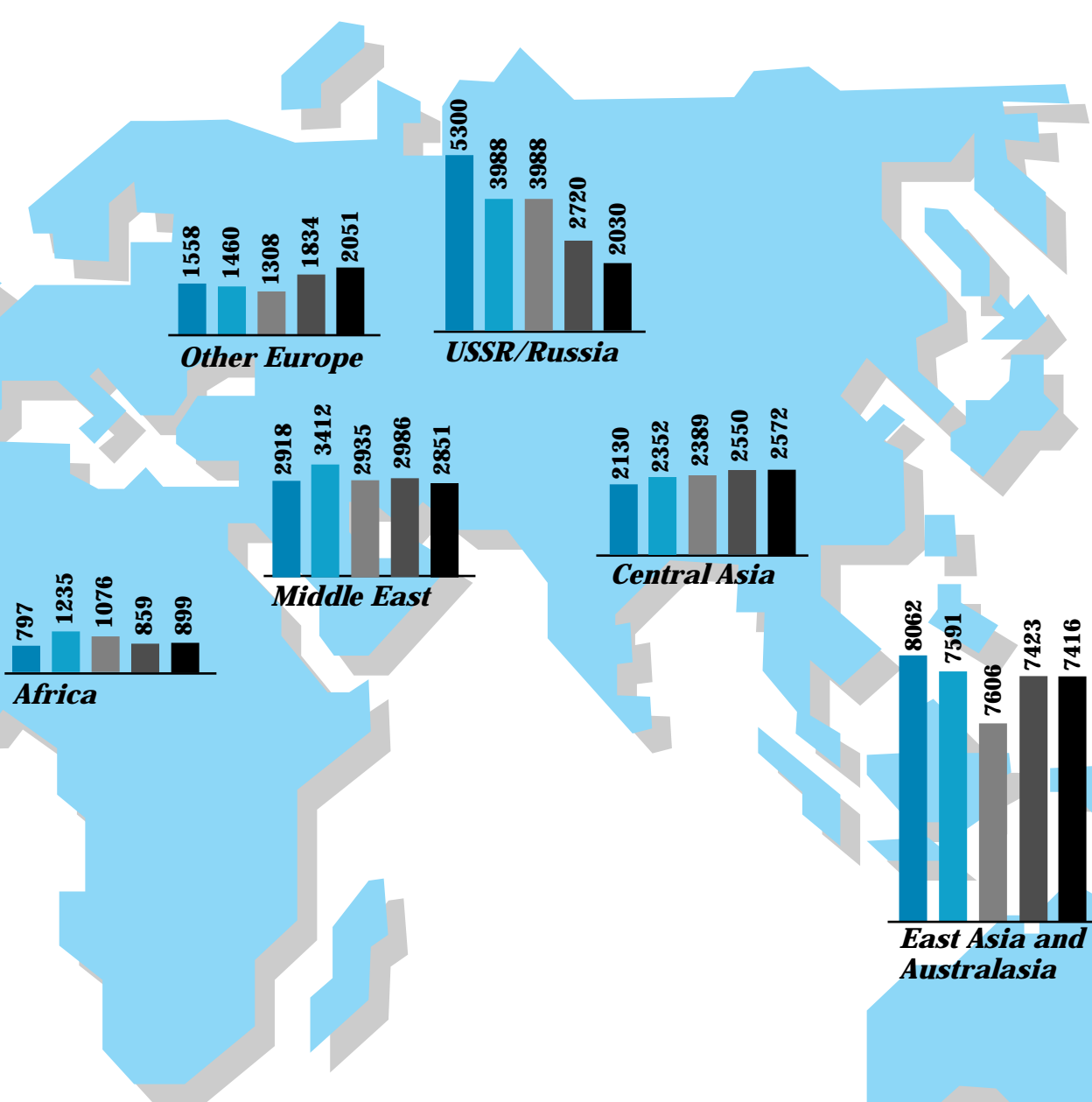


Reintegration of military personnel and civilian personnel employed by the armed forces in non-military jobs

In addition to the effect on the industrial labor force, there are two areas that will require manpower adjustments: military personnel and civilian employment in the armed forces. After many years of war, internal conflict, widespread human rights violations and economic and social crises, peace settlements have been possible or are currently being worked out in several countries of Asia, Africa and Central America. In Europe—particularly in Russia and Germany, but also in other former Soviet republics and members of the former Warsaw Treaty Organization reductions in military manpower are now taking place as a result of the changed political situation, arms control and budget constraints.

A large percentage of the approximately 27 million soldiers and officers in the armed forces of the world are currently being demobilized. Reductions of approximately 2.2 million have been made over the three-year period 1990 to 1992. It is planned to reduce by about the same number of officers and soldiers (2.3 million) in the short and medium term. This massive reduction of about one-fifth of all regular armed forces is unprecedented since the end of World War II. The majority of these reductions have been made in the industrialized countries.





Development of the armed forces, 1985–1993

Figures in thousands

Sources: International Institute for Strategic Studies, *The Military Balance* (several issues and authors' archive). The totals are based on estimates in a number of cases. Compiled by the authors.

Notes: 1. Figures for 1985, 1990 and 1991 in the region 'USSR/Russia' include all the armed forces of the former Soviet Union; for 1992 and 1993 only figures for Russia are

included. The armed force of the other newly emerged states of the former USSR are included for 1992 and 1993 in the columns 'Other Europe' and 'Central Asia.' 2. Paramilitary forces and opposition forces are not included; they numbered approximately 4.6 million and 0.8 million respectively in 1990, which brought the total of military personnel in 1990 to over 32 million.

Demobilization is particularly difficult in a number of developing countries that have experienced successful conflict resolution or peace settlements. About one-third of the cuts in military personnel (700,000) took place in developing countries until 1992 and it has been announced that about the same number will be cut shortly. Substantial numbers of soldiers have been demobilized in Afghanistan, Angola, Cambodia, Chad, El Salvador, Ethiopia and Nicaragua, although in some of these countries the demobilization process is threatened or has been stopped or reversed by continued violent conflicts. In other countries successful beginnings of demobilization programs are underway (Colletta and Ball, 1993; World Bank, 1993).

There are long-term prospects for making use of the available skills. Demobilization creates opportunities for human development. Often, however, the nature of military training is not a particular asset outside the armed forces. Taking part in violent conflicts and wars certainly teaches people how to fight, but it is not an adequate framework for adult education and technical training.

In addition to the armed forces, millions of civilians employed in the armed forces (the world total of which is not even known) will lose their jobs. In the United States, for example, there are plans to reduce the number of civilian personnel in the armed forces by 200,000 to about 900,000 between 1987 and 1997.

Retraining and reintegration programs are required to ease the transition to private-sector or other public-sector jobs. Delays in demobilization and lack of funds for reintegration programs increase the danger of criminal behavior on the part of demobilized soldiers. The funds required in developing countries are relatively small compared to world military expenditures. In Uganda, the settling-in package per soldier was calculated to amount to US \$718; the total US \$19.4 million

program cost covers 23,000 soldiers plus 50,000 dependents (Colletta and Ball, 1993, p. 37).

Short- and medium-term social instabilities and economic distortions are not unusual during demobilization periods. In several countries both difficulties in implementation of and political resistance to demobilization and lay-offs have been experienced. A certain amount of pre-release training within the armed forces or in demobilization camps (establishment of land colonies, model farming communities and vocational technical training) or temporary work (repair of war damage, building infrastructure and other public work) foster the process of integration and might even offer a considerable potential for disseminating improved methods of agriculture, vocational training, and so on. To link such integration programs with other technical assistance programs improves their chances of success.

Demobilization programs require several phases: (1) feasibility studies and program planning; (2) preparation and retraining within the armed forces; (3) disarmament and discharge by the armed forces or under international control; (4) actual demobilization and settling-in, with a settling-in package and assistance (transportation, clothing, food, medical allowances, school fees, etc.); and (5) long-term reintegration, with training, education, social services, job counseling, and so on.

Reallocation of military bases and installations

There is no clear definition of what constitutes a 'military base,' 'basing rights,' an 'overseas base,' or a 'military installation.' These concepts can include airfields, naval sites, ground force sites, missile sites, space sites, communications and control sites and equipment, intelligence and command sites, environmental monitoring sites of the mili-

tary, research and testing sites, logistic sites, repair facilities, maneuver grounds, and so on. The conversion process involves the land, buildings and fixed installations on these sites. In the context of reallocating property owned or used by the military to civilian purposes, even housing is of great importance. Given the diversity and large number of these types of military site, it is obvious that no generally accepted criteria exist for determining the alternative uses to which these bases could be put (Cunningham, 1993).

The number of military sites that will be closed is not known. Most affected are countries in Europe, because of the withdrawal of former Soviet and American forces as well as the overall shrinkage of forces of the European countries. In Germany alone more than 1,000 properties of different kinds are being freed by the former Soviet forces. About 8 per cent of the territory of the state of Brandenburg in Germany was previously occupied by Soviet or East German armed forces. US military installations are being closed in many parts of the world. They range from sites with several thousand troops in some cases, to those with only a few specialists.

Base closures and the dismantlement of military installations are usually expected to result in economic dislocations. Four types of economic effect are experienced: (1) reductions in population in a certain community or region which leads to reduced income; (2) reduced input requirements of the base and thus shrinkage of local demand; (3) loss of local employment in the base with the possibility of increasing local unemployment; and (4) intensified economic effects through multipliers.

Previous experience has shown that predictions of the economic effects of base closures were often 'worst case analyses' and proved inaccurate. The impacts experienced were often less severe than predicted, and opportunities for compensatory employment have been underestimated. With many military bases

now being vacated, competition for realistic reuse projects has become stiff. The success of conversion of military installations depends on the general state of the local economy, the degree of dependence of the local economy on the base, and the flexibility of social and economic institutions. The relative impact of a base on the community will be larger in a smaller, sparsely developed economy than in a more developed metropolitan area (Brömmelhörster and Hamm, 1992).

A variety of new uses have been found in the past. While sites were mainly converted to educational uses, other alternative uses include recreation, manufacturing, trade, transport and storage. The most valuable asset of a closed base is usually the property previously occupied by the military.

Military infrastructure (bases, maneuver grounds, communication installations, etc.) can be put to practical non-military use. The military usually has its own agenda in deciding which bases are going to be closed—their efficiency considerations (ensuring that the forces remain operational, decreasing costs of transition, minimizing personnel moves, etc.) do not necessarily lead to closing the bases that could most readily adjust. Thus, military efficiency considerations and economic rationale in the affected region are not necessarily compatible.

Military installations often require intensive and costly cleanup operations. Contamination of the soil and water as well as dumped munitions are the most common environmental hazards. Detailed risk assessments and complicated technical decontamination processes such as soil excavation, removal of special waste, pumping of water, physio-chemical or washing treatments, and microbiological or thermal treatments are often required. These are heavy investments that must be undertaken before the land can be used for other purposes.

Alternative use or scrapping of surplus weapons

The numbers of weapons in several weapon categories (both conventional weapons and weapons of mass destruction) are being reduced substantially (Worldwatch Institute, 1994). Some categories of nuclear weapons have been totally eliminated and others significantly reduced as a result of both unilateral reductions and the provisions of the START Treaties (DiChiaro and Laurance, 1994). Chemical weapons are to be banned from the armed forces and totally destroyed (Stock, 1993). Also, a number of weapon categories are limited by the Treaty on Conventional Armed Forces in Europe (CFE) and have to be reduced. There is a surplus of tens of thousands of conventional weapon systems (particularly armored vehicles and aircraft), especially in

Europe (Sharp, 1993). Landmines are particularly problematic. It is estimated that about 100 million mines have been dispersed worldwide. They are a long-lasting barrier to the return to normal life, especially in agricultural regions, long after fighting has stopped (Human Rights Watch, 1993).

There are different methods for managing surplus weapons. (1) Storage of weapons is the simplest method, although this often means that weapons are kept without the appropriate protection against theft. Furthermore, storage might not be the most desirable option when withdrawing weapons from active deployment, as stored weapons could be put to use again. Often this is the first choice of military forces uncertain of the future requirements for such weapons. (2) The export of obsolete weapons is the cheapest but most counter-productive method of getting rid of superfluous weapons. This method was prac-

Impact of CFE cuts

Note: ACV=armored combat vehicle.
Source: Bundesministerium der Verteidigung (Ministry of Defense), *Verifikation (Bonn, 1992)*, p.18.

	Tanks	ACVs	Artillery	Aircraft	Helicopters	Total cuts
NATO						
- inventory	24 217	34 481	20 766	5 719	1 594	
- post-CFE	20 000	30 000	20 000	6 800	2 000	
- cuts	4 217	4 481	766	0	0	9464
Former WTO						
- inventory	31 988	41 582	25 065	8 462	1 719	
- post-CFE	20 000	30 000	20 000	6 800	2 000	
- cuts	11 988	11 582	5 065	1 662	0	30 297
Total cuts	16 205	16 063	5 831	1 662	0	39 761

Conversion in the context of international security

ticed by several countries in anticipation of the CFE Treaty. Large quantities are still for sale today, as evidenced in the first year of data generated by the UN Register of Conventional Arms. In economic terms, the supply of such weapons far exceeds the demand, creating very low prices. Such a situation may provide new incentives for armed forces, paramilitary forces and insurgents to acquire weapons. (3) Allowing the weapons to become obsolete over time is a practical consequence of technical and economic difficulties rather than a chosen policy. It involves ecological hazards and the temptation to export these weapons for economic benefits remains. (4) Destroying or disabling weapons is technically feasible, although not without costs and ecological hazards. Disabling weapons so that they can no longer serve military purposes is usually possible within a short space of time and at limited costs. What is costly, time consuming and technically complex is the final disposal of weapons and their components. (5) Converting weapons or other military equipment for civilian use is the most constructive approach but it is limited in scope. Reuse for civilian purposes is possible only for a limited number of military equipment categories (such as radar, satellites, helicopters and trucks). The limitations are the result of specific and demanding military performance specifications of weapon systems which are often too inefficient, hence costly. In rare cases 'demilitarized' weapons might even serve other military purposes, for example, as simulators, targets or exhibits.

As a general rule it is safe to predict that the two most desirable methods, namely conversion and scrapping of weapons, will either be very limited in scope or will require substantial amounts of investments, although—as has been proven in the case of munitions—economically attractive projects to reclaim the raw materials are feasible. There is no doubt, however, that disarmament will not only release resources but also require funds.

As indicated in the introduction to this paper, while in the short-term conversion is based on national and perhaps local interests, in the strategic sense conversion is inexorably tied to global concerns. Nowhere is this more clear than in the area of security. In the long-term, the outcome of conversion efforts will to a large extent depend on the international security system which evolves in the wake of the end of the cold war.

Lack of focus on the dynamics of the international security system

In the past international security factors have been responsible for the failure of the logic of the conversion process. To date most of the studies and policy actions dealing with conversion have assumed a changed world order that provides a supportive environment for conversion. In Hartley et al.'s 1993 seminal work, *Economic Aspects of Disarmament: Disarmament as an Investment Process*, the introduction deals with these "changes in the world political scene."

There have been dramatic changes in the last few years, especially in Europe. The end of the East-West cold war arms race has raised the prospect of genuine disarmament associated with sizable arms reductions. These developments have coincided with a general improvement of the international climate, creating new opportunities for the peaceful settlement of regional conflicts. The role of the United Nations in these endeavors has

also been reinforced. . . . There are now real prospects of a disarmament race as states and their electorates seek the benefits of the 'peace dividend' (Hartley et al., 1993, p. 3).

In its two reports on conversion, the Office of Technology Assessment of the US Congress necessarily makes certain assumptions about the international environment so that they can concentrate on dealing with national problems.

The dissolution of the Soviet Union and the end of the cold war have profoundly changed US defense needs. Just what a prudent US national defense system will be in the post-cold war era is not yet clear. But it will almost certainly require less money and fewer people than it did in the 40 years when this Nation faced a hostile and obdurate military superpower with a huge army poised at the borders of western Europe. (United States Congress, Office of Technology Assessment, 1992, p. 3)

The 1990s are uncharted territory. For the first time in half a century, the United States faces no massive military threat from a superpower foe. Instead, the major challenge is to keep up with the economic competition from friendly countries. (United States Congress, Office of Technology Assessment, 1993, p. 3)



Even those experts on conversion who have a more pessimistic view of the post-cold war international system make assumptions and then move directly to dealing with conversion at the national level. In their book *Dismantling the Cold War Economy*, Ann Markusen and Joel Yudken comment:

The specter of the United States as the world's cop, paid by other countries to mobilize airpower and personnel for a foreign military arena like the Gulf in 1990-91, is not attractive. Nor is that of a nation compelled to sell arms to close the trade gap. . . For the coming decade, and the coming century, the United States must make a bold new set of national commitments to address fundamental economic, social, and environmental problems. . . (it) will take a lot of courage, entrepreneurship, and creativity. But it can be done. (Markusen and Yudken, 1992, p. XVII)

The point of all these citations is not that analysts and policy-makers should not make assumptions. The difficult choice for those working on conversion at the national level is that some sort of assumptions about the future are necessary, lest the 'model' become so complex that no action is possible. But at the same time we must do better at identifying and monitoring those variables in the international security environment so that our conversion plans and policies are not made in splendid isolation. The international security system is in transition and is very dynamic, a situation which calls for more attention to how it is changing and how it can affect the progress of conversion.

Obstacles to conversion at the national level

Hartley does address 'barriers to change,' in terms of those interest groups which effect government outcomes. Those dedicated to influencing conversion policy outcomes will spend a great deal of time monitoring and trying to influence these groups in the direction of conversion; but the potential for such influence can be limited, especially in those cases where the domestic actor is responsive to international pressures. For example, armed forces faced with cuts will respond by citing new international threats or perhaps the specter of a dangerous and uncertain world. Defense industries, perhaps in conjunction with defense towns and trade unions, will join forces with those political parties who focus on the uncertainty of the future and the need to 'keep our powder dry.' As time goes by there are very few actors who are truly 'domestic.' It is therefore prudent that the conversion process and those charged with moving it forward also keep their eyes on international developments which may end up, albeit through domestic actors and institutions, creating barriers to conversion. A variety of factors, operating at the national level but often driven by international pressures, serve to slow down the pace of conversion.

Lack of change and continued inertia and inflexibility

Although many governments have begun to rethink their security policy this process has had only limited effects on force structures and procurement planning. The political environment has totally changed as old enemy images have faded away or abruptly disappeared. Weapon procurement has been postponed, projects have been stretched or canceled and forces are shrinking. Yet the principal policy (in NATO as well as other OECD

The principal reason for the continued high level of military spending and the hesitant emergence of the conversion process is the slowness of reform in security policy. Despite the changes in the world political climate which have opened the door to new structures of peace and security, few have yet been realized.

Two types of genuine security consideration play an important role in maintaining existing defense capabilities. First, the emergence of new conflicts (particularly ethnic and territorial conflicts in Europe, but also the experiences of the Persian Gulf War and the UN operations) have led to the formulation of new threat perceptions. Threats are less clear-cut than during the cold war period. In addition, several governments of Asian countries perceive the post-superpower situation as less stable than before and are undertaking major programs of modernization or expansion of their armed forces. Regional conflicts or rivalries have not faded away with the end of the cold war. Second, there is concern in some of the major arms-producing countries that reduced arms development and production will lead to a loss of what is considered to be an essential 'defense industrial base.'

countries) is to continue many of the programs of the 1970s and 1980s. The weapons that were designed during the 1980s are being developed and built today. To do a little less of the same is the overriding principle of governments' policies. A case in point is the four-nation (British, German, Italian and Spanish) Eurofighter. The aircraft was intended to fight against enemy aircraft in Warsaw Pact countries. Despite the new security environment, the four governments are going ahead with what amounts to the most expensive arms project ever in Western Europe.

Parochial interests

The new challenges in a world in which international armed forces could assume an expanded role, especially in UN peace-keeping operations, have so far had little effect on force structures or procurement policies. There are both organizational and sociological explanations for this. First, the large organizations of the armed forces have been slow in adjusting to the changed world order. Armed forces and their international coordination bodies are characterized by inflexible policy, bureaucratic red tape and organizational inertia. Second, the armed forces have experienced an existential crisis, afraid of a future without purpose. It is human nature in a period of transition for decision makers and military personnel to try to hold on to existing structures—even though this is costly and short-sighted. Thus, the slow process of reform and the absence of the necessary radical change are no surprise.

In addition there is the economic interest of the arms producers. The arms industry, together with research and development facilities, is currently experiencing a crisis. Many companies try to stay in the arms business and lobby for their products or for support for weapon exports. The loss of jobs, regional economic instabilities, balance-of-payments effects and other arguments are raised to convince govern-

ments to slow down or halt the process of disarmament.

In the right context these arguments can be interpreted as a struggle for survival by companies and communities on the one hand and, on the other hand, they express the parochial and vested interests of a large number of people and powerful or influential groups that depend for their livelihood on military budgets.

Maintaining defense capabilities

Development and production facilities are upheld at levels in excess of current demands in order to maintain a defense industrial base for possible future requirements.

A recent example from the United States illustrates these phenomena at work. Defense industries faced with declining orders have put severe pressure on the government for assistance. In one proposal, which was subsequently defeated, money set aside for conversion was to be used to finance the sale of weapons or related services. In another, a Senate bill has been introduced, sponsored by Senator Kempthorne, that creates a US \$1 billion loan guarantee program for arms exports to NATO members, Japan, Australia, South Korea and Israel. The international aspects of this bill are several. First, language was included which directs the National Security Council to insure that an arms sale is 'in accord with United States security interests, that it contribute to collective defense burden sharing, and that it is consistent with United States non-proliferation goals' (Lumpe, 1993, p. 5). Supporters of this bill also pointed out that 'U.S. business is finding that financing is now required for many defense sales to these allies. Such financing already is offered by Great Britain, Italy, Brazil, Germany, the Netherlands, France, Belgium, Canada, Spain and Sweden. Without such financing, U.S. companies will lose many upcoming competitions by default. The Kempthorne amend-

ment corrects this competitive disadvantage' (Hickey, 1993).

How are such arguments rebutted in the bureaucratic politics that characterize the drive for conversion? If increased arms exports detract from conversion, how can they be decreased? Note in the above example that the bill cites such concepts as 'collective defense burden sharing.' Is this concept still valid in the post-cold war international security environment? Are we still involved in collective defense or is it collective security, cooperative security, or 'the unipolar moment,' as one author put it? The citing of other countries who subsidize their industry clearly invokes an international norm—if we don't they will and we will lose the sale. This has been a constant theme of US industry for many years. One could also ask if it is really true that the countries listed have subsidies for arms exports.

In any case the politics of this matter will go far beyond the shores of the United States. Lora Lumpe of the Federation of American Scientists wrote an editorial entitled 'Dump the 'Kempthorne' Amendment,' directly countering the supporters of the bill. Her arguments invoke aspects of both US domestic politics and international security. Examples of the latter include a set of propositions which purport to describe the reality of the international security system. For example: 'With American soldiers [having faced] American-made weapons in Somalia, it should be clear that arms exports are not a cost-free substitute for the necessary down-sizing of the U.S. arms industry. . . Arms exports enable arms races and wars. . . European governments will probably respond to a new American aid program by providing increased financing and marketing assistance to their industry, fueling other arms races around the world' (Lumpe, 1993, p. 5). It is clear from this example that the necessity and pace of conversion cannot be debated in an international security vacuum.

“keeping the powder dry”



Stiebing / ZENIT

The boundary between the vested interests of certain parochial groups and genuine security concerns is not always clear, since it is impossible to delineate objective threat perceptions. The fear of threats and outside aggression has strong underlying psychological connotations, and what is appropriate in terms of defense cannot be ascertained by scientific methods and is always controversial and disputable. Such perceptions, often exaggerated and oriented on worst-case scenarios, slow down the process of disarmament and postpone a reaping of the 'peace dividend.'

The particular importance of alternative approaches to international security

A major part of the explanation for both the initial surge of attention and activity on the conversion front, and its continued progress, is a function of the international security system. The unambiguous and abrupt end of the cold war forced nation-states to respond by reducing defense budgets and down-sizing both armed forces and industry. But once the initial steps had been taken, attention turned to the type of international security system that was to take the place of the cold war system. It is not the purpose of this paper to review the extensive literature which has emerged to address this point. Rather, it makes the basic point that the nature of the evolving international security system can have a major effect on the pace of conversion and needs to be taken into account when planning and implementing conversion programs.

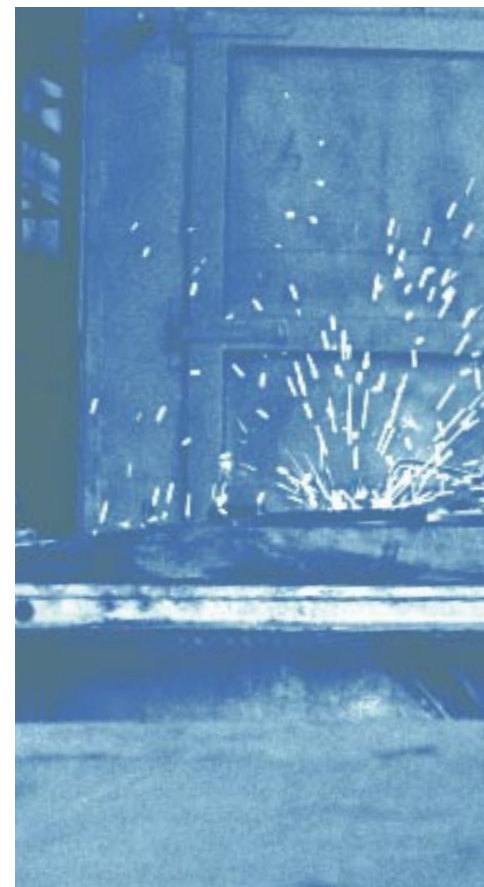
Collective security systems and conversion

To integrate security into the conversion process involves explicitly connecting it to the concepts, frame-

works and theories that are used to explain conflict and cooperation among states. When debating conversion during the cold war, adversaries in the debate viewed conflict and its causes through different lenses. Without a global contest to shape the system, regionally and even locally specific factors have risen in importance and created a need for some new framework to shape thinking.

In the aftermath of the cold war it became popular to think (and act) as if a collective security regime would replace the defunct bipolar system. The epitome of these efforts was the January 1992 speech by UN Secretary-General Boutros Boutros-Ghali entitled *An Agenda for Peace*, considered at the time to be a blueprint for the revival of collective security and the return of the United Nations to its roots of 1945. Such thinking was reinforced by an increased role for the UN in peace-keeping operations. A true system of collective security would have had a major impact on conversion, since the need for national armed forces would have significantly diminished. No sooner had this rebirth occurred, however, than it began to bump into the realities of local and regional conflicts that had remained dormant during the cold war and to encounter serious reservations on the part of the major world powers. In a seminal article, 'The United Nations and International Security,' Adam Roberts demonstrates how the certainty which surrounded the immediate post-cold war era has been replaced with uncertainties that have significant implications for the future of conversion. The essence of Roberts' critique is that there are major flaws in the collective security approach to coping with conflict and that 'although there is a much more cooperative approach to security today, a system of true collective security is not yet in place' (Roberts, 1993, p. 27).

Collective security systems invariably involve calls for arms control and disarmament. More specifically, a push is made for lower levels of



armaments consistent with internal security requirements and for contributions to those international forces needed to deal with aggressors and violators of the agreed-upon status quo. If we are not to have such a collective security system, as seems to be the case, alternative frameworks and ways of thinking about conflict (i.e., cooperative security) may be more appropriate when designing mechanisms to cope with them.

Cooperative security as an alternative framework for international security

One might very well interpret Roberts' concluding remarks as a call to accept *realpolitik* plus a little bit of cooperation in certain circumstances as the definition of the current international security system. As such it has significant implications for conversion. In such a system



alliances still exist and arguments in regard to arms export subsidies in the name of alliance burden sharing will still be possible. The major argument of this paper is that those working on conversion issues should strive to develop a concept of international security in which conversion is legitimate and politically acceptable at the national level. If not the short-term burdens, many of which have already appeared, become major obstacles to the investment required for the long-term benefits. If Roberts is correct in stating that the road to collective security may be fatally flawed, and we believe he is, what is the alternative? As Roberts and others point out, there is more cooperation in the post-cold war era, including the development of new organizations, machinery and mechanisms. The challenge is to harness and promote this into a system which has as its goal significantly lower levels of defense spending, with enough

structure to provide support for national conversion efforts. Cooperative security schemes abound and a growing body of literature has emerged to inform policy debates. These publications can be used to illustrate the thinking that dominates this approach and provide a framework that can be used to develop and utilize arms control (Chayes and Chayes, 1994).

The major objective of cooperative security is to move beyond a security system based on deterrence to one based on 'reassurance.' As it relates to lower levels of armaments, *cooperative security contemplates an expanding network of generally applicable limitations on weapons systems and force structures. . . Compliance must be induced by the continuing sense that the limits imposed on military capabilities are consistent with the security requirements of the participants and that they are being generally observed. (Chayes and Chayes, 1994, pp. 65-66)*

▲ ***Disabling of ex-Soviet tanks, according to CFE Treaty provisions, Wünsdorf / Germany***

Chayes and Chayes develop five design elements and principles for such a system. The first of these is a strong normative base. Without norms that nation-states see as legitimate and promulgated by fair and accepted procedures, compliance becomes problematic. 'To be durable, international legal norms, whether or not treaty based, must meet broad tests of legitimacy. They must be the product of regular and accepted procedures, be applicable equally and without invidious discrimination and satisfy minimal notions of substantive fairness' (Chayes and Chayes, 1994, p. 71). 'Most important in terms of enforcement of norms is that deviant action calls for explanation and justification.

The actor when challenged must

show that the facts are not as they seem to be, that the rule, properly interpreted, does not cover the conduct in question, or that some other matter excuses the failure to fulfill the normative requirement' (Chayes and Chayes, 1994, p. 69).

Inclusiveness and non-discrimination, the second element in the framework, requires that the states affected by the system have an opportunity to participate in its operation. One of the best ways to overcome the lack of inclusiveness and non-discrimination, especially in this time of transition, is to promote transparency, the third element in the scheme, defined as 'the availability and accessibility of knowledge and information, generated through the processes of the (international) regime. . . .' (Chayes and Chayes, 1994, p. 81). Transparency can perform three functions in a cooperative security regime. 'It permits coordination between actors making independent decisions. It provides reassurance to actors cooperating or complying with the norms of the regime that they are not being taken advantage of. It exercises deterrence on actors contemplating non-compliance or defection' (Chayes and Chayes, 1994, p. 81).

Regime management, the fourth design element, involves the functions of information management—collection, evaluation, verification and analysis—review, assessment, interpretation and dispute settlement. The final design element is that of sanctions and other coercive measures, 'available to deter and if necessary redress egregious and obdurate violation. Unilateral military action for this purpose is fundamentally inconsistent with the postulates of cooperative security' (Chayes and Chayes, 1994, p. 68).

Assuming that cooperative security in a more general sense evolves, the implications for conversion seem clear. For example, where the international security system has a norm against the acquisition of nuclear weapons, states violating this norm would also be failing to convert their national economy and military

system to a civilian one. The same would be true of chemical weapons. As regards the conversion dimension of surplus weapons, this norm becomes a powerful tool against those national actors who would drag their feet at destroying, or storing under international supervision, weapons of mass destruction. None of this is intended to suggest that national governments cannot and would not destroy such weapons based on their national security or economic interests, or that conversion must await the development of cooperative security regimes. Rather, international norms which evolve as part of a cooperative security system can be used to assist and promote the national conversion policy.

Cooperative security also means more inclusiveness and non-discrimination. One of the best ways to overcome insufficient inclusiveness and the presence of discrimination is to promote transparency. Transparency refers to the availability and accessibility of knowledge and information on the military activities of states (i.e., arms imports and exports, production, inventories, budgets, etc.). As this type of information becomes more transparent, either globally or regionally, the conversion activities and programs of states will benefit. States must be able to determine the progress towards conversion being made by their neighbors, particularly ones that they do not trust.

One of the tools for moving the international system in the direction of cooperative security, and conversion for that matter, is conditionality, that is, tying the receipt of economic aid to a reduction in military expenditures, arms imports and other behavior detrimental to the conversion issue areas described in section II of this paper. Again the question is one of transparency. How will we know when we have accomplished our goals? How will we know conversion when we see it? More importantly, how will each member of the international community see the progress of their fellow member states as they move toward these

'lowest levels of armaments?' If a major point of this paper is that the costlier conversion becomes the more states will look to the international arena for support, then transparency becomes an essential component of the conversion process.

We are only in the early stages of the transformation from a cold war international security system. In some issue-areas and in some parts of the world progress is being made towards cooperative security (e.g., transparency in the Conference on Security and Cooperation in Europe—CSCE). While the most supportive situation for the success of conversion in all six areas described in section II above is the achievement of a cooperative security regime, it must be realized that uncertainty is common and reversal to the cold war system a distinct possibility.

In summary, the future of the international security system has important implications for conversion. Is it likely that unilateralism or isolationism will emerge? Can any of the major powers go it alone? This appears highly unlikely given the integration of the international system, especially in finance, trade, technology and communication. States are being thrown together almost against their will, despite some well known resistance to the idea. Even in an area heretofore the sole domain of nation-states, military production, states are finding it increasingly difficult to go it alone. Some form of security regime other than anarchy will emerge and it is imperative that its linkages to conversion be understood and integrated into the developing programs.

►
**Maneuver grounds,
Lüneburger Heide / Germany**



The economics of conversion: Short-term pain, long-term gain

As with security, the national and local conversion programs which are emerging are very dependent on economic factors which, at root, are international in nature. Awareness of these realities is essential in the development and implementation of conversion programs so that programs that are sound from the viewpoint of security do not fail because of economic impracticality.

Economic constraints: costs and benefits

Financial and other economic constraints have contradictory effects on the speed at which disarmament takes place. On the one hand, the financial burden of the military sector and the pressures on public finances have fostered the process of disarmament and might even have been a stronger incentive than the changes in the international political arena. On the other hand, the immediate social and economic burdens of disarmament that have been placed on people, communities, regions or companies have mobilized counter-pressures. Mayors and other local officials have tried to convince national governments to spare their community from military base closures. Company management and employees have called for less restrictive arms export regulations. Officers and soldiers have protested against demobilization. The short-term effects of disarmament are often social and economic. In the long term, however, the resources saved can be invested in other non-military projects. A decisive key to the pace of disarmament is to smoothen the transition period and manage the drawdown efficiently.

A recent study by the International Monetary Fund, in a special section of its World Economic Outlook, addressed the issue of the economic effects of reducing military spending. The study produced a series of predictions and trends regarding the peace dividend based on a computer simulation. The impact in industrial countries, according to the study, of a 20 per cent cut in military expenditure is projected to result (over an 11 year period) in a 3.9 per cent annual reduction of government consumption, a 1.0 per cent annual increase in private consumption, a 1.8 per cent increase in private investment and a 0.3 per cent increase in gross domestic product (GDP). The results in developing countries are even more positive. The short-term impact of reduced military expenditure, however, is a

negative GDP growth rate (IMF, 1993, pp. 104–112). In a critique of this analysis, the Financial Times pointed out that ‘the full economic benefits of lower military spending are felt only if all countries participate equally in the cuts. Logically, a 20 per cent across-the-board reduction in spending should result in no loss of security for the nations of the world. But the history of disarmament suggests that persuading countries of this would be a monumental task’ (Norman, 1993).

In the short term the costs are dominant, but in the long term benefits emerge. Lengthy adjustment periods are necessary in certain sectors. Conversion cannot solve all of the world’s economic, social and environmental problems; but taken together the investment in conversion programs in the six areas described above has the potential of shortening the transition time, promoting economic growth and reducing social hardships.

Costs and benefits of conversion

Conversion measures

Reallocation of financial resources

Reorientation of R&D

Restructuring of industry

Demobilization

Base closure

Scrapping of surplus weapons

The key to reducing opposition to disarmament and demilitarization is the implementation of conversion programs. The economic impact of demilitarization and disarmament is marginal in international terms. It is modest in most countries at the national or macroeconomic level but more pronounced in numerous regions and localities, at the microeconomic level of the firm and in specialized sectors of the economy.

Disarmament adjustment cost

Not all the possible savings in military budgets will release funds for other areas. Deep cuts in armed forces and in hardware spending require significant retraining costs for labor that is to be diverted to other sectors, as well as payments for unemployment benefits. The arms industry would have considerable capital investment to write off. Funds have to be invested to reorient R&D facilities. Cleaning up contaminated military bases and aiding demobilized soldiers is costly. The production of fewer swords will require fewer sword makers and there is not enough demand for more ploughshare makers. It will not be possible to secure every job, to rescue every company, to offer an alternative to every laboratory or to utilize each and every military base. Sometimes it is better to abandon specialized facilities. The costs incurred as a consequence of disarmament are therefore sometimes called the 'peace penalty.'

However, these costs are not different from those of other forms of

adjustment and restructuring which have been experienced in other industrial areas, such as steel, textiles, shipbuilding or agriculture. What is important here is the opportunity to reallocate the resources saved in the military sector to other productive activities. The costs of retraining, scrapping surplus weapons, cleanup of military installations, and alternative investment should not really be deducted from the savings as 'costs.' They should be regarded as investments in the future that will allow for a gradual exit from national policies dominated by security concerns.

Both positive and negative social and economic effects are a consequence of arms control, disarmament, and demilitarization policies. Just as the military infrastructure has been created by a conscious, although not always rational, policy, so too is a conscious public policy to ease this process of adjustment and smoothen the transition required. If built upon community-based solutions that address the actual problems of the people, conversion programs will provide for more effective and efficient transition assistance.

costs and benefits

Costs

- Shrinking income for companies, employees and soldiers
- Under-employed R&D facilities, brain drain, job losses
- Shrinkage of production, job losses, over-capacities, economic distortions
- Job losses, economic dislocations, social and political instability
- Shrinkage of regional income, economic distortions, increasing unemployment in affected regions
- High investment costs, pressure for arms exports, ecological hazards

Benefits

- Financial resources for productive programs: development, environment, infrastructure, retraining
- No crowding-out, availability of financial resources and qualified scientists and engineers to tackle global challenges
- Reorientation of production, useful products, availability of modern production facilities, compensatory employment
- Availability of skills, public works programs, repair of war damages, resettlement
- Opportunities for alternatives: reuse for education, recreation, industry, commerce and transportation
- Reduced acquisition and maintenance cost for weapons, reduced number of weapons, scrap value, limited use in non-military programs

A balance sheet of costs and benefits: the case of Germany

Germany is a country strongly affected by the military drawdown as a result of the unification of the two Germanys and the provisions of the CFE Treaty. Effects are felt in several of the above-mentioned six issue areas of conversion.

The expenditures of the German Government for the Bundeswehr, for foreign forces in Germany, civilian defense and military assistance have undergone great changes since 1989. FRG expenditures in 1989 in these categories amounted to roughly DM 59 billion; GDR military expenditures at the same time totaled just below 15 billion marks (Huck, 1994). After increases during 1990 and 1991 in the FRG budget to cope with the integration of the former East German army, the budget began to fall again in 1992 and by

1993 had reached the previous 1989 level. Considering these ups and downs and the elimination of the former GDR, total expenditure savings between 1989 and 1994 amounted to DM 74 billion (in current expenditures).

The arms industry in Germany is faced with severe cuts in procurement expenditure. Although German exports increased during the early 1990s, this trend has not benefited industry and could not compensate for reduced orders from the Bundeswehr. The increase in exports was partly the result of the sale of both Bundeswehr and Nationale Volksarmee (NVA—former GDR forces) second-hand equipment. As a result, the job losses in industry are estimated to have amounted to approximately 140,000 between 1991 and 1993, from a peak of 280,000 (Simon, 1994). The end of this down-sizing is not in sight.

The most dramatic economic and social effects of the changed military environment are the number of jobs lost in the armed forces. More than 60 per cent of the military personnel and civilian personnel in the armed forces in the former two Germanys will be reduced by the mid-1990s. Over 1.2 million jobs will be directly lost. In addition, an unknown number of jobs that depended on the military bases and purchases made by armed forces in Germany will be lost.

The consequences of these reductions are felt mainly at the regional level, particularly in those areas where a high concentration of military activities was the backbone of the economy. The number of new jobs created directly as a result of disarmament measures (destruction of weapons, organizing base closures) is relatively small. It will take a long adjustment period and investments into alternative activities to compensate for the job losses.

Military and civilian personnel reductions in Germany ***Figures in thousands***

Note: Part of the NVA military and civilian personnel has been integrated into the Bundeswehr.

Source: Martin Grundmann and Margitta Matthies, *Kleinere Bundeswehr und weniger Rüstung* (Münster and Hamburg: Lit Verlag, 1993), p. 24.

		1989	mid-1990s	reductions
Military personnel	Bundeswehr	483	370	113
	NVA	170	0	170
	Western Allies	403	156	247
	Soviet Union	338	0	338
Civilian personnel	Bundeswehr	184	154	30
	NVA	51	0	51
German civilian personnel with foreign forces	Western forces	96	43	53
	Soviet forces	2	0	2
Foreign civilian personnel	in Western forces	83	?	?
	Soviet forces	207	0	207
Total		2 017	723	1 211

In 1989 in East and West Germany combined, an area of approximately 9,200 square kilometers was occupied by military forces: the Bundeswehr (2,530 km²), its allies (1,480 km²), the NVA (2,400 km²) and Soviet troops (2,770 km²). In the eastern state of Brandenburg, 8 per cent of the entire territory of the state was under the control of the East German and Soviet military. Most of the 9,200 km² of land is situated in rural areas and a substantial part was or is still used for maneuver grounds and shooting ranges. Less than one-third is located close to urban areas where land is often urgently needed. The cost of remedying the contaminated environment on bases freed by the former Soviet troops has been estimated at about DM 25 billion.

Another estimate concluded that the sale of 50 per cent of the land held by the Bundeswehr and its allied forces at a market price of about DM 200 per square meter

would put about DM 380 billion in the coffers of the Ministry of Finance, which is charged with the sale of the land. The Ministry of Defense, however, estimated the value of the land used by the allied forces in 1983 to be only DM 40 per square meter. The problem which arises, however, is that most city or regional governments that could potentially utilize the freed territory are not in a financial position to make such acquisitions.

The CFE Treaty and the unification of Germany required both the restructuring of the Bundeswehr and reductions of large numbers of weapons and other military equipment.

In addition, about 80 per cent of the equipment stores of the former NVA will not be required by the Bundeswehr: about 52,000 trucks, 25,000 truck trailers, 1,500 motor bikes, 295,000 tons of munitions, 1.2 million fire arms, 4,500 tons of liquid

rocket fuel and 760,000 pieces of uniform (Huck, 1994, p. 14). Some of this material has been sold to other countries (United Nations, 1993).

Economic conditions for success

The success or failure of conversion on a global scale depends largely on the general state of the economy. Usually, a recession slows down the adjustment process, while a growing and dynamic economy is the key to successful conversion. Successful conversion in a global, macroeconomic perspective is defined as:

- a decrease or fall in military activity (reduction of military expenditure, military R&D, weapons procurement, and shrinking exports, etc.), and
- a rise in civilian activities (increasing production, employment, economic growth, etc.)

Reductions of major equipment systems in Germany

Source: Bundesministerium der Verteidigung (Ministry of Defense), Verifikation (Bonn, 1992), p. 18.

	Tanks	ACVs	Artillery	Aircraft	Helicopters
<i>CFE ceilings</i>	4 166	3 466	2 705	900	306
<i>FRG inventory 1990</i>	4 726	3 103	2 140	626	207
<i>GDR inventory 1990</i>	2 274	5 817	2 462	392	51
<i>Total cuts</i>	2 834	5 474	1 897	118	0

The success or failure of conversion can be demonstrated in a simple four-field matrix. Four different situations - all of which have been experienced - are possible:

- A dynamic arms race or increased military activities in a recession, as the world experienced in the mid-1970s when the East-West arms race continued unmitigated despite severe economic contractions as a result of the oil price crisis.
- Disarmament during a period of recession when both civilian economic and military activities are shrinking. This situation can be observed since the end of the 1980s or the beginning of the 1990s.
- A booming economy in which more money is spent on the military, as the world experienced in the early 1980s during the early Reagan Administration when the Soviet Union tried to respond to the armaments program in the United States.

- A period of reduced military activities and intensified civilian economic activities. This situation was experienced after World War II.

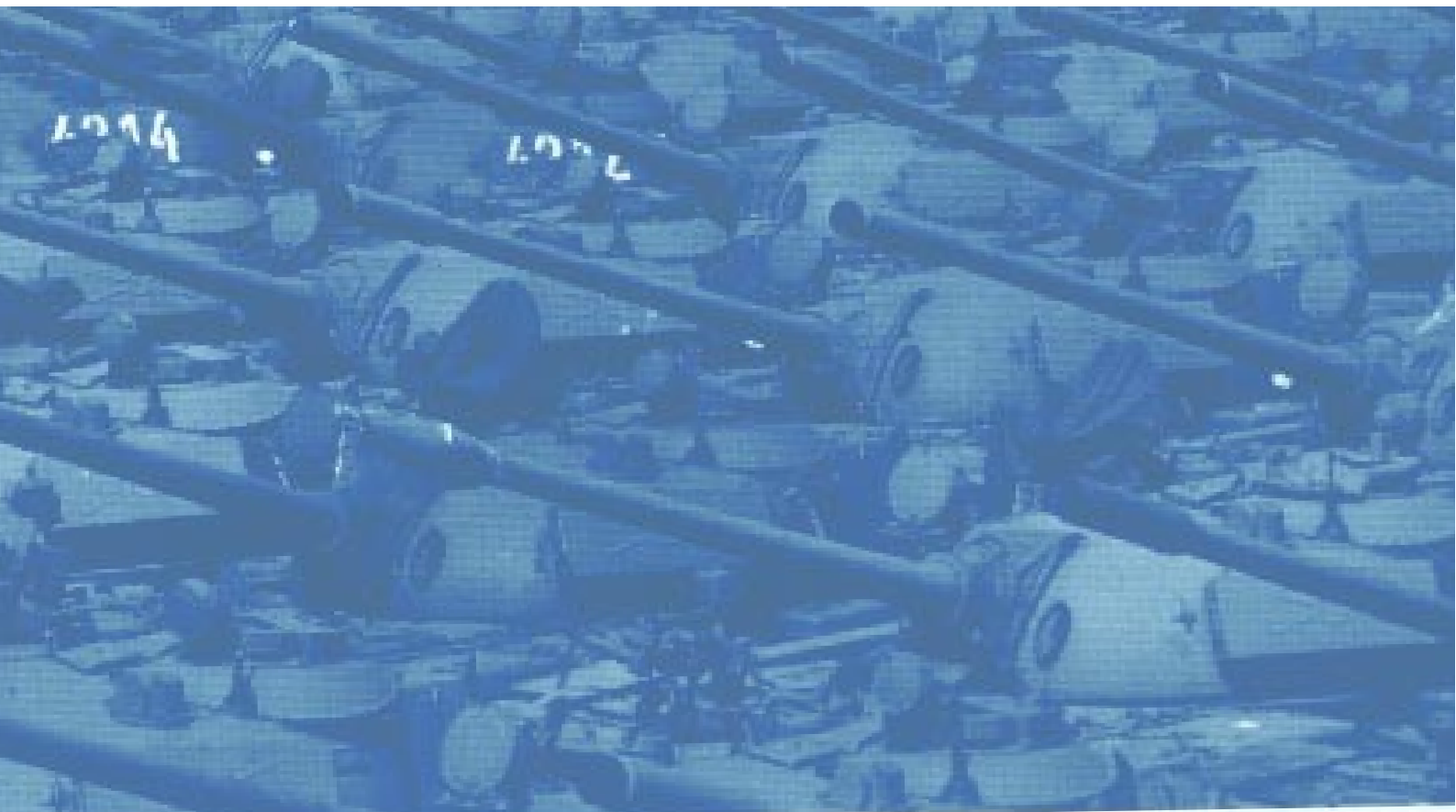
Successful conversion beyond individual projects—at the global and macroeconomic level—is particularly difficult to achieve since there is always a temptation to spend more on weapon procurement and the military when it can be afforded in a booming economy. At the same time, economic development is a precondition for broad-based success in the reorientation of military to civilian activities. When the economic conditions are propitious for successful conversion, it will depend on political will whether additional resources will be freed from the military sector or, conversely, whether they will be spent on new military and weapon projects.

Stiebing / ZENIT

Matrix:

Macroeconomic conditions for successful conversion

		Military activity (expenditure, trade)	
		increasing	decreasing
civilian activity (economy)	decreasing	1. armament in a contracting economy or recession (mid 1970s)	2. disarmament in a contracting economy or a recession (early 1990s)
	increasing	3. armament in a booming economy (early 1980s)	4. disarmament in a booming economy = successful conversion (post World War II)



▲
*Stocks of former
NVA battletanks,
Saxony / Germany*

▶
*Conversion at ZTS,
Martin / Slovakia*



Paul Langrock / ZENIT

Implementing conversion: The international institution setting

It is argued in this paper that conversion takes place at the local and national level, yet its progress and success is very much dependent on international security and economic factors. In this final section of the paper, the implications of this reality are addressed with particular attention to how the implementation of conversion programs can be facilitated by the development of non-governmental and governmental international institutions.

Convergence of knowledge-based communities

In section II of this paper, it is made clear that conversion is multi-dimensional. In practical terms, this means that those planning and implementing conversion programs will be from various disciplines and fields of expertise. It also means that these people will come from all levels of government—local, regional, national, and international. How can such a diverse body of knowledge and expertise be effectively coordinated to produce sensible policy?

First, at the epistemic level, conversion experts from academia, non-governmental organizations (NGOs), local and national governments and international institutions need to establish linkages with their counterparts in all six dimensions of conversion as well as international security and economics. This approach is described as follows:

How decision makers define state interests and formulate policies to deal with complex and technical issues can be a function of the manner in which the issues are represented by specialists to whom they turn for advice in the face of uncertainty. . . . Networks of knowledge-based experts—epistemic communities—[can play a role] in articulating the cause-and-effect relationships of complicated problems, help states identify their interests, frame the issues for collective debate, propose specific policies, and identify salient points for negotiation. Control over knowledge and information is an important dimension of power and the diffusion of new ideas and data can lead to new patterns of behavior and prove to be an important determinant of international, policy coordination. (Haas, 1992)

The policy issues to which such an approach has been applied include international trade in services, nuclear arms control, whaling, protecting stratospheric ozone, food aid and central banking. While it is true that the policy issues involved with conversion, international security and economics may be closer to the core of a country's sovereignty, there appears to be no logical reason why these epistemic communities cannot be more coordinated. Such coordination is only in its infancy and there certainly is a need for cross-fertilization and diffusion of new ideas and data, perhaps even leading to the new patterns of behavior mentioned above. At the very least, such integration could lead to the multi-disciplinary and transparent knowledge-base which is so critical to the success of conversion.

A high priority is to promote interaction between military experts and those currently identified as 'conversion specialists.' Experts on proliferation—both of conventional weapons and weapons of mass destruction—are rarely involved with the conversion community despite having interests which clearly reinforce each other. Even within the non-proliferation community there is little integration of experts on conventional and nuclear/chemical weapons. This community, steeped in knowledge of how and why states seek to acquire weapons, is critical to the conversion effort.

When it comes to making policy on conversion, without epistemic convergence and cross-fertilization, conversion and security/military experts both in and out of government will each create their own models of down-sizing based on assumptions from their own disciplines. Officials responsible for military personnel should be able to make their case for the impact of alternative rates of down-sizing forces, and conversion advocates should make their case for the implications of delaying such action. These models should then be integrated.

Some type of forum needs to be established so as to foster cooperation between the conversion and international security epistemic communities. The newly established Bonn International Center for Conversion (BICC) is one place where this might be accomplished, for example. If BICC amasses data on conversion projects world-wide, feeds them to the UN and insures that they are non-discriminatory in the eyes of all states, there is no reason why these data cannot become a practical means of monitoring progress in disarmament.

►
Dismantling Russian R23 air-to-air missiles at Buck Inpar GmbH, Pinnow / Germany



The primary purpose of an organization such as BICC is to foster the conversion of military systems to civilian. Monitoring and disseminating information on the security context in which conversion takes place should be an integral part of that effort. This will no doubt include comparative studies of successful and failed conversion efforts around the world. This is an ideal time to acquaint specialists with the realities of how the evolving international security and economic system relates to conversion. Proliferation experts can educate those charged with conversion in how to deal with the forces working towards the acquisition of more, not fewer, weapon systems. Conversion specialists, both new and old, should know about the transparency regimes which are evolving and ongoing. Conversely, BICC might contribute to fostering the development of transparency regimes, for example, a military expenditures and national defense production data base that contains reliable data considered legitimate by states.

The role of the United Nations

At some point the efforts must be elevated more formally to the international organizational level. It is not realistic to think that the imperative of conversion will become so obvious that national governments will do this exclusively on their own initiative. For one thing conversion costs money, which most states in need of conversion do not possess. This would seem to call for the involvement of international financial organizations. As for security, this paper argues that sooner or later conversion efforts will bump headlong into security concerns which, by their nature, may best be handled at the international level.

In some special cases conversion, security and economics can be integrated on a regional basis—the conversion initiatives of the European Community being a good example. As it gets involved in conversion, the United Nations should carefully consider where it assigns the primary responsibility for conversion, considering that the typology developed in section II makes it clear that conversion is much more than industrial conversion and is greatly influenced by international factors. Therefore the primary responsibility should at least be shared by economic and security/disarmament-oriented international bodies.

Following up on an earlier proposal to establish an interdepartmental task force on conversion, the United Nations in 1993 assigned the primary coordinating role for conversion to the United Nations Conference on Trade and Development (UNCTAD) in Geneva. As stated in the Secretary-General's directive,

The function of the task force would be to provide Member States with political, technical and economic advice on the various aspects involved in redirecting manufacturing and research-and-development capacities, as well as soldiers and technical personnel, from military to civilian endeavours. . . . As the question of conversion relates primarily to industry, and considering that primary responsibility for transnational corporations and science and technology have been transferred to UNCTAD, the Secretary-General believes that the UNCTAD secretariat would be the appropriate office to coordinate the establishment of the task force. Other offices that might be included in the task force are the Office for Disarmament Affairs, the Office for Outer Space Affairs, the Department of Policy Coordination and Sustainable Development, the Department of Development Support and Management Services, and UNDP. (Aimé, 1993)

For most of the world, however, it will be necessary for the United Nations to become involved in the conversion issue. As described in this paper, there are two types of international factor which will affect the rate of conversion—security and economic. If one accepts the six categories of conversion activities described in section II, it can be seen that none are purely economic, even the conversion of arms industries.

A major conclusion of this paper is that international security concerns are critical to the conversion effort and eventually the United Nations must get more involved than at present. In the areas of industry, economic development and finance there are obvious candidate organizations. In the area of security, however, a serious case of institutional underdevelopment is evident as a result of the minimal role played by the UN during the cold war. While this paper suggests a role for UN organs in integrating security concerns into the international conversion effort, such organs will of necessity play a subordinate role pending the development of an international security scheme in which states allocate more autonomy to international organizations in general.

Bringing in security

While such a mandate is laudable in that it recognizes that conversion cuts across multiple issue-areas, bringing in the international security dimension will be a challenge. Giving the lead to UNCTAD is understandable given that, during the cold war, only organizations such as UNCTAD, the United Nations Development Programme (UNDP), the United Nations Industrial Development Organization (UNIDO) and others performed operational functions which allowed them to mature and perform the type of tasks critical to the conversion effort.

In contrast, the primary international security organs of the United Nations—e.g., the Military Staff Committee and the Department of Disarmament Affairs—were victims of the cold war stalemate and remained either dormant or were relegated to studies, meetings and other non-operational activities. One organization which might be involved in this important function of integrating international security into the conversion effort at the international level is the recently revitalized UN Centre for Disarmament Affairs (UNCDA) in New York. Since 1992, UNCDA has been charged with developing and maintaining the Register of Conventional Arms, a cooperative security measure which invites states to submit data on their arms imports and exports to the UN. So far over 80 countries, for the years 1992 and 1993, have submitted such data to be entered, analyzed, and distributed by UNCDA using the latest computer and data base technology. While data and information on conversion programs within member states have yet to be internationalized within the UN system, the UNCDA has developed a fledgling information system that could serve as a model for such an exercise.

The UNCDA has an established infrastructure—its regional disarmament centers in Africa, Latin America and Asia—which has the



potential to bring together experts of varying experience. In these days of fiscal austerity, it is unlikely that a new 'conversion' organization would be created to perform this function. Additionally, UNCDA could start immediately to resuscitate the UN's dormant military expenditure reporting system, especially given the increasing support for conditionality as a tool which benefits not only the conversion effort but that of international security as well. As one last point, integrating national conversion efforts into the international security agenda through an organization such as UNCDA would enhance the reporting and dissemination of successful conversion efforts and may well contribute to lessening the fears of those states reluctant to undertake such programs.

Overall, there is a need for both a horizontal expansion of the conversion effort—a widening of the categories of effort beyond industrial conversion—as well as a

▲ ***US tanks awaiting transport, Fulda / Germany***

vertical expansion to include the integration of international security and economic issues and the development of appropriate international organizations and non-governmental organizations necessary to foster and promote such integration.

- Adams, Gordon and Steven Kosiak. 1993. "The United States: Trends in Defense Procurement and Research and Development Programmes." In Wulf, 1993, pp. 29–49.
- Aimé, Jean-Claude (Chief of Staff of the Executive Office of the Secretary-General of the UN). Letter addressed to Kenneth Dadzie, Secretary-General of UNCTAD, dated 18 August 1993.
- Bitzinger, Richard A. 1993. *Adjusting to the Drawdown: The Transition in the Defense Industry*. Washington, DC: Defense Budget Project.
- Boutros-Ghali, Boutros. 1993. *New Dimensions of Arms Regulation and Disarmament in the Post-Cold War Era, Report of the Secretary-General*. New York: United Nations.
- Brömmelhörster, Jörn and Rüdiger Hamm. 1992. *Regionalwirtschaftliche Risiko- und Chancenpotentiale der Standortkonversion—Eine empirische Bestandsaufnahme dargestellt am Beispiel der Stadt Mönchengladbach*. Bochum: Ruhr-Forschungsinstitut für Innovations- und Strukturpolitik.
- Brunn, A., L. Baehr and H.-J. Karpe, eds. 1992. *Conversion: Opportunities for Development and Environment*. Heidelberg: Springer-Verlag.
- Brozoska, Michael. 1993. "Transfer of Arms and High Technology." In Götz Neuneck and Otfried Ischebeck, eds. *Missile Proliferation, Missile Defense and Arms Control*. Baden-Baden: Nomos.
- Chayes, Antonia Handler and Abram Chayes. 1994. "Regime Architecture: Elements and Principles." In Janne E. Nolan, ed. *Global Engagement: Cooperation and Security in the 21st Century*. Washington, DC: Brookings Institution, pp. 65–130.
- Chatterji, M. and J. Brauer, eds. 1991. *Economic Issues of Disarmament*. New York: New York University Press.
- Colletta, Nat J. and Nicole Ball. 1993. "War to Peace Transition in Uganda." *Finance & Development*. June, pp. 36–39.
- Cooper, Julian. 1993. "The Soviet Union and the Successor Republics: Defence Industries Coming to Terms With Disunion." In Herbert Wulf, 1993, pp. 87–120.
- Cunningham, Keith. 1993. *Base Closure and Reuse: 24 Case Studies*. Report of the Business Executives for National Security Defense Transitions Project. Washington, DC: BENS.
- De Andreis, Marco and Francesco Calogero. 1993. "Conversion of Military Research and Development in the Former Soviet Republics—The Future of Their Nuclear Weapon Complex." Brussels: Directorate General for Science, Research, and Development of the Commission of the European Community, January.
- DiChiaro, Joseph and Edward J. Laurance. 1994. "Nuclear Weapons in a Changing World: Consequences for Development." *The Nonproliferation Review*. Vol. 1, No. 2 (Winter), pp. 27–42.
- Gummett, Philip and Judith Reppy, eds. 1988. *The Relations Between Defence and Civil Technologies*. Dordrecht: Kluwer.
- Haas, Peter. 1992. "Introduction: Epistemic Communities and International Policy Coordination." *International Organization*. Vol. 46, No. 1 (Winter).
- Hartley, Keith et al. 1993. *Economic Aspects of Disarmament: Disarmament as an Investment Process*. New York: UNIDIR publication/United Nations.
- Hickey, James. 1993. "Support Export Financing: U.S. Competitors Enjoy Vital Fiscal Advantage." *Defense News*, 16–24 October.
- Huck, Burkhardt J. 1994. *Friedensdividende in der Bundesrepublik Deutschland*. Ebenhausen: Stiftung Wissenschaft und Politik, January.
- Human Rights Watch. 1993. *Landmines: A Deadly Legacy*. New York: Human Rights Watch.
- IMF. 1993. *World Economic Outlook*. Washington, DC: International Monetary Fund, October, Annex II.
- Izyumov, Alexei. 1993. "The Soviet Union: Arms Control and Conversion—Plan and Reality." In Herbert Wulf, 1993, pp. 107–120.
- Lumpe, Lora. 1993. "Dump the 'Kempthorne' Amendment." *Arms Sales Monitor*, No. 22 (30 September).
- Markusen, Ann and Joel Yudken. 1992. *Dismantling the Cold War Economy*. New York: Basic Books.
- Norman, Peter. 1993. "The Benefits As Swords Turn Into Ploughshares." *Financial Times*, 27 September.
- Pauker, Liba and Peter Richards, eds. 1991. *Defence Expenditure, Industrial Conversion and Local Employment*. Geneva: International Labour Office.
- Renner, Michael. 1992. *Economic Adjustment after the Cold War: Strategies for Conversion*. Dartmouth: UNIDIR publication/Aldershot.
- Reppy, Judith. 1993. "The United States: Unmanaged Change in the Defence Industry." In Herbert Wulf, 1993, pp. 50–65.
- Roberts, Adam. 1993. "The United Nations and International Security." *Survival*. Vol. 35, No. 2 (Summer), pp. 3–30.
- Sharp, Jane M. O. 1993. "Conventional Arms Control in Europe." In SIPRI, 1993, pp. 591–617.

Simon, Gunnar. 1994. "Die Nationale Wehrtechnische Basis." In Martin Meyer, ed. *Protokoll zum Kolloquium*. Ebenhausen: Stiftung Wissenschaft und Politik, 25 May, annex 1.

SIPRI (Stockholm International Peace Research Institute). 1993. *SIPRI Yearbook 1993: World Armaments and Disarmament*. Oxford: Oxford University Press.

Sköns, Elisabeth. 1993. "Western Europe: Internationalization of the Arms Industry." In Herbert Wulf, 1993, pp. 160-190.

Stock, Thomas. 1993. "Chemical and Biological Weapons: Developments and Proliferation." In SIPRI, 1993, pp. 259-292.

Thee, Marek. 1990. *Science and Technology: Between Civilian and Military Research and Development*. UNIDIR Research Paper No. 7. New York: UNIDIR publication/United Nations, November.

United Nations. 1991. *Conversion: Economic Adjustments in an Era of Arms Reduction*. Disarmament Topical Papers No. 5 (2 Vols.) New York: United Nations.

United Nations. 1993. *Register of Conventional Arms, Report of the Secretary-General*. General Assembly Document A/48/344, October.

United States Department of Defense. 1992. *Adjusting to the Drawdown. Report of the Defense Conversion Commission*. Washington, DC: Government Printing Office, 31 December.

United States Congress, Office of Technology Assessment. 1992. *After the Cold War: Living With Lower Defense Spending*. Washington, DC: Government Printing Office, February.

United States Congress, Office of Technology Assessment. 1993. *Defense Conversion: Redirecting R&D*. Washington, DC: Government

Printing Office, May.
United States Congress, Office of Technology Assessment. 1994. *Proliferation and the Former Soviet Union*. Washington, DC: Government Printing Office, September.

Walker, William and Phillip Gummert. 1993. *Nationalism, Internationalism and the European Defence Market*. Chailiot Papers No. 9. Paris: Western European Union, Institute for Security Studies.

World Bank. 1993. *Demobilization and Reintegration of Military Personnel in Africa: The Evidence from Seven Country Case Studies*. Report No. IDP-130. Washington, DC: World Bank.

Worldwatch Institute. 1994. *State of the World 1994*. New York: W. W. Norton & Company.

Wulf, Herbert, ed. 1993. *Arms Industry Limited*. Oxford: Oxford University Press.

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