

**DISARMAMENT FOR DEVELOPMENT  
CONVERSION OF ARMS RELATED ACTIVITIES  
FOR PEACEFUL PURSUITS**

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**DECLARATION**

This is to certify that the dissertation entitled **DISARMAMENT FOR DEVELOPMENT ; CONVERSION OF ARMS RELATED ACTIVITIES FOR PEACEFUL PURSUITS** submitted by Mr. Kumar Manish is in partial fulfilment of nine credits out of a total requirement of twenty four credits for the degree of Master of Philosophy (M. Phil) of this University. This dissertation has not been submitted for any other degree in the University and is his own work.

We recommend that this dissertation be placed before the examiners for evaluation.

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***to all friends and foes.....***

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K. Menish  
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# **INTRODUCTION**



## INTRODUCTION

From time immemorial, when organised groups were formed, defense has been an integral part of the inter-group interactions, based on armament and preparation of violent actions to thwart invaders, resulting in wars throughout history. Wars, in early history, involved a few hundreds on each side resulting in the destruction of a limited nature and death of few hundreds. Wars now involve millions and leads to death of millions together with the massive destruction of the material resources and the environment. It involves a massive diversion of scarce resources away from human development towards creation of non-productive destructive forces. The human race has now graduated from the use of spears and arrows of the early history to the use of nuclear weapons, whose destructive capabilities can annihilate the human race. Man now has the possession of the weapons which, instead of destroying his opponent and increasing his power, can boomerang and destroy mankind itself.

The destructive capabilities of the modern wars, as evidenced by the two World Wars, necessitates an analysis of the policy of defense through armaments so as to find an alternative or improve upon and put an end to wanton destruction. The annihilatory capacity of nuclear weapons makes such an analysis urgent. The question put forward by the two World Wars and nuclear weapons is that in this age of immense destructive capabilities, do the defense systems and mechanisms of the previous ages, which

have failed miserably in instituting a permanent peace, have the capability of putting an end to warfare, which now promises the destruction of the entire human race.

Armaments, from time immemorial, have always been the only means employed for defense preparations. Armaments also are the instruments of war. They have now the capability of destroying its very progenitor; mankind. Notwithstanding the historical legacy of armaments, it is still the basis of the defense policy of nations. The logic of nuclear weapons is that nuclear war ensures the annihilation of the human race. It has now become a question of mankind's survival.

In most international debates the current level of world military spending is described as clearly excessive in terms of satisfying the humanity's need and resolving global problems of today. The need for breaking away from this apparently mindless logic of accumulation has been clearly felt, given the post-cold war conditions in the international politics of today. Corresponding with what has come to be known as environmental decade and save-the-child campaign, amidst barren economic conditions in the world, the idea of 'conversion' on a tangible plane could not have come a little too soon.

Conversion can be defined as a process, whereby financial, labour and material resources are re-distributed between the civilian and military spheres, and a shift is effected in the course of

disarmament from ammunitions manufacture and other related activities to peaceful production through the drafting, planning and implementing relevant economic, organisational, technical, and other measures. Conversion is not only helpful in improving a country's productive forces; it also adds an irreversible character to the mechanism of disarmament. Conversion measures effectively block all attempts to compensate for disarmament in one area by escalating the development of the arms race in others. The Soviet-American Symposium on Conversion held at the Institute of World Economy and International Relations at the U.S.S.R. Academy of Sciences in 1984, came to the conclusion that Conversion is feasible and is also inseparable from disarmament. Inga Thorson in her follow-up report also states that conversion is feasible. She also says that since Conversion involves a lot of time and resources, it is important to start planning for it irrespective of when disarmament begins.

My M.Phil dissertation's First Chapter tries to nullify the claim that, security stems from increased armaments. The concept of security is redefined to include the threat from growing hunger and the increasing disparity between the haves and the have-nots. A link between DISARMAMENT and DEVELOPMENT is tried to be established here, as was brought out in the Conference on Disarmament and Development held at New York in the year 1987.

The Second Chapter looks at Disarmament from the angle of the need to put to alternative use the released resources of the

defence industries. Here, the nature of the arms industries which is very much different from that of the civilian industries is analysed. Any divergence of the resources or cut in demand for an industry is going to lead to adverse consequences. The same occurs to the arms industries during disarmament, where obviously the demand for their products is reduced. The economic consequences of disarmament are analysed here. To overcome these consequences the firms have to diversify into civilian production. This process is known as Conversion, and accordingly the Chapter looks into the meanings and definitions of Conversion. A brief history of Conversion from the World War - II to the present is also dealt with here.

The Third Chapter analyses the Dynamics of Conversion and how to go about it. It looks into the Conversion of Industries, of the Capital Equipment, of Nuclear Facilities, of Marketing Operations, and the Workers involved / affected in Conversion. It also looks into the necessary legislation that may have to go into the Conversion Process.

The last and the Concluding Chapter takes a comprehensive view of the whole thesis and comes to the view that, not only conversion is desirable, but that it is a NECESSITY. Conversion is feasible and will occur some day. But the planning for it must begin now irrespective of when Disarmament takes place.

# **CHAPTER - I**

## **DISARMAMENT FOR DEVELOPMENT**

## DISARMAMENT FOR DEVELOPMENT

Just as excuses seem to move more to people more than reasons legends, especially when they contain half-truths, seem to have larger than niche in the ecosystem of the human mind than does history. Perhaps, therefore, it is one of the great tasks of the human intellect to find excuses for things which are reasonable to do so that people will do them and so create history which is both true and has the power of legend. One such legend is that Security stems from a larger and more formidable arms build-up. Before we examine the truths of the legend let us look into the concept of security.

Security needs to be redefined not only in terms of military security but also economic development and growth. The United Nations study on the Relationship between Disarmament and Development in 1981 was a major landmark in the evolution of a conceptual framework encompassing disarmament and development, which had been treated till then as two different objectives. This study placed disarmament and development relationship in the context of a triangular interaction between Disarmament, Development, and Security. It developed a broader perspective on the concept of security beyond military security to highlight the threats and challenges to international and national security systems that

could arise among others, out of a widespread reduction in prospects for economic growth, and the morally unacceptable and politically hazardous polarisation of wealth and poverty, and insufficient development in the developing countries.

The International Conference on the Relationship between Disarmament & Development held at New York from 24 August to 11th September, 1987, also recognises the link between Security, Disarmament and Development. The final declaration of the Conference stated : " Security is an overriding priority of all nations. It is also fundamental for Disarmament and Development, as Security consists of not only military but also political, economic, social, humanitarian and human rights and ecological aspects " <sup>1</sup>. Enhanced security can, on the one hand, create conditions conducive to disarmament, and on the other, provide the environment and confidence for the successful pursuit of development. The development process, by overcoming non-military threats to security and contributing to a more stable and sustainable international system, can enhance security and thereby promote arms reduction and disarmament. A process of Disarmament that provides for undiminished security at

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1. 'Disarmament and Development; A Positive Relationship'. World Focus vol. 8 no. 10 October 1987 p. 20.

progressively lower levels of armaments could allow additional resources to be devoted to addressing non-military challenges to security, and thus result in enhanced overall security <sup>2</sup>.

Having seen the relationship between security and disarmament & development and having acknowledged that security means both military and non-military security let us go on to analyse the real issue of this chapter - that of the relationship between disarmament & development . This relationship is indicated by the social and economic consequences of the arms race, which result from in the military sector. Secondly, the conversion of military industry after disarmament into industries manufacturing goods and services for the civilian population. Thirdly, the impact of global military expenditure on the world economy as a whole and particularly for global macro-economic variables- how it affects inflation, the rate of growth, the world economic crises etc <sup>3</sup>.

The degree of material well-being generated by any society depends not only on its ability to fully employ the productive resources( labour, capitals, materials, energy, etc. ) available to it, but also on its ability to employ them in ways that contribute to the society's standard of living. The production of ordinary

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2. Ibid. p. 20.

3. Dubey Muchkund : 'Inga Thorson Report Analysed.' World Focus , vol. 8 no. 10 October 1987, pp. 3-4.



consumer goods and services such as food, clothing, housing, etc., clearly add to the material living standard. But if those resources have been used unproductively, they will in the long term be a drain on society. Because resources are being wasted, things which need doing will not be done, and so the economy and the wider society will suffer. The use to which resources are put is so fundamental and so overriding in its impact on the ability of an economy to efficiently generate economically useful goods and services that, economic systems as different as those of capitalism and communism experience similar structural problems when resources are diverted from contributive use. This is particularly true over the long run, in whatever type of economy we take.

The economic damage done by the military burden in the United States of America has surfaced mainly in the form of simultaneously high inflation and high unemployment, through the intervening variable of deteriorating productivity. In contrast, in the former Soviet Union, the damage surfaced mainly in the form of chronic problems of supplying sufficient quantity and quality goods and services.<sup>4</sup>

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4. Dumas, J. Lloyd , 'Military spending and economic decay' in Dumas, J. Lloyd (ed.) : The Political Economy of Arms Reduction : Reversing Economic Decay, AAAS Selected Symposium. Boulder , Colorado, Westview Press , 1982, p. 3.

In the developed nations, there is a distortion in the production pattern, which leads to long run consequences of distortions in the macro aggregates of the economy. In the developing countries however, the picture is entirely different. The technological capacity of the economy is not capable of supporting the sophisticated means of warfare. These have to be therefore imported, which leads to the outflow of scarce foreign exchange, which is urgently required at times for the basic survival necessities of the population. Here, the purchase of this merchandise of death does not justify the ends of military security.

The arms race has its own logic of escalation. The desire to acquire more in the name of security is unending. The destructive potential increases with increasing costs and there is no end. This applies to regional arms races in the developing world too. Be it in the context of India and Pakistan, or Iraq and Iran, or the numerous countries of Africa, the desire to keep up with Jonases leads to squandering of more and more scarce resources which can be used for the improvement of the living conditions of the people. This mindless arms race is criminal, given that the majority of the population of the developing world lives at mere subsistence level.

The linkage between disarmament and development can be therefore analysed at two levels. One - a halt to the mindless arms race in the developing nations themselves and, subsequent

disarmament and the channelising of these resources for development in these countries themselves. Two - disarmament in the developed world, and movement of the released resources to the developing world. The former is a relatively easier process as the the defense production economy hardly exists in these countries and no major structuring of the economy is required. Just a halt to the arms race will release vast resources which can be used to import essentials like food, medicines, machinery or be invested in the economy itself. The latter case however, is more complex. It not only requires a restructuring of the economy as these economies have large defense production sectors, but also means of transferring these resources to the developing world. The possibility of using resources released from the military sector to contribute to development, co-operation was discussed in the 1981 United Nations Report on the Relationship between Disarmament and Development. This report confirmed that, the outlook for work , peace and security would be considerably brighter if relations between industrialised and Third World countries were improved by increased international cooperation. The creation of a link between disarmament and development should help to promote such cooperation and have a positive effect on political and economic relations between countries.

One area closely linked with this co-operation issue, deals with the transferability of resources. Development as well as military build-up requires huge amounts of material and human resources. Since the supply of these resources is limited in both developed

and developing countries, a reduction in military expenditures should release resources to be used for development. From a purely financial point of view reduction of only 4-5% in world military expenditures would make it possible to double the current level of development assistance. The need therefore arises for an appropriate political instrument to connect disarmament and development.

Several international initiatives have been undertaken in the past with a view to forming some sort of link between disarmament and development. Since 1950, the United Nations General Assembly has discussed and adopted a number of resolutions which call for a reduction of military expenditure and the use of the funds released from the defense sector for economic and social purposes. The relationship between disarmament and development is also manifested in the final report of the First Special Session of the United Nations General Assembly devoted to disarmament in 1978, and in the resolutions adopted in 1970 and 1980 on international development strategies for the Third World. The United Nations Report reviews a number of these suggestions of which so far none have been accepted.

The idea of a disarmament fund was initially proposed in 1985 by Edgar Faure, the then French Prime Minister, and was subsequently introduced in the United Nations Assembly by France on several occasions. In 1978, Valéry Giscard d'Estaing,

the then President of France, presented a detailed proposal to the United Nations for the creation of an international disarmament fund for development. It was anticipated that, the fund would be financed both by voluntary contributions and by savings realised through disarmament agreements. In 1983 French President Francois Mitterand, reiterated this proposal in his speech before the United Nations General Assembly <sup>5</sup>.

In 1980, the Brandt Commission suggested that there should be an international tax on arms exports <sup>6</sup>. In this way, the automatic financing of a world development fund could be guaranteed.

The United Nations Institute for Disarmament Research (UNIDR) prepared a report to form an institutional connection between Disarmament and Development and submitted it to the 39th United Nations General Assembly in 1984. UNIDR's work was carried out with the assistance of a Steering Group headed by Edgar Faure. Their study reviewed three possible methods of transferring resources to a disarmament fund for development, all of which

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5. Thorsson, Inga : In Pursuit of Disarmament : Conversion from Military to Civil Production in Sweden, Report by special expert, vol. 1.A. Stockholm, Gotab, 1985, p. 313.

6. Ibid. p. 313.

had originally been set forward in the 1981 United Nations Report.:-

1. Voluntary Contributions;
2. Armaments levy, which could be a tax either on military expenditures or on sale of weapons;
3. Disarmament dividend, where a certain portion of the resources released through disarmament agreements would be channeled towards development <sup>7</sup>.

As a first step UNIDR suggested that a special disarmament account for development be set up within an existing United Nations Agency following a General Assembly resolution. It also concluded that, the proposal for a disarmament fund for development is worth pursuing, especially since it would provide an institutional and political relationship between disarmament and development. It would also focus the attention of governments and the general public on the issue.

There are, however, a number of significant political and technical problems associated with the proposed fund. If such a fund is actually to be created, the militarily dominant states must not only support it and show themselves as willing to conduct serious disarmament negotiations, but also agree on how the value of

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7. Ibid. p. 314.

arms reductions will be calculated. In the course of future arms-limitations and disarmaments negotiations, the size of anticipated savings and the proportion to be allotted to the development fund ought to be specified.

For the time being let us not look into the question of transferability of resources to the developing world by the developed world. Let us take the first aspect itself, that of resource transfer at the national level itself. Government expenditure on defense can be transferred to other areas of state spending such as economic services (agriculture, industries, infrastructure) as well as social services and education. Any shift in the above direction can only take place if resources are continuously shifted out of military areas to peaceful areas in an irreversible manner. This is only feasible if a process of conversion takes place. Conversion of not only Government expenditure but also of industries, of people, of technology, of research, etc. However, before we go on to analyse the actual process of conversion a few problems must be sorted out. The nature of the military establishment and industry is such that it cannot be made to attend to civilian needs overnight. Moreover, since the military setup comprises a large part of the economy a sudden cutback in its fundings is bound to have an

effect on the economy. It is therefore necessary to look into the nature of arms industries as well as into the economic consequences of disarmament.



**CHAPTER - II**

**CHARACTERSTICS OF ARMS  
INDUSTRIES**

## CHARACTERISTICS OF ARMS INDUSTRIES

An objective appreciation of military industry and military base activity is a primary requirement for an ability to cope with the conversion problem. It is generally assumed that, since defense firms and military bases have been operated by competent men, it therefore follows that these same men should be able to convert, quickly, the physical and human capital that they utilize, to civilian uses. However, this expectation falls short of several characteristics of the military industry.

The managers and technologists of the defense industries have become experts in serving one consumer - the Central Government<sup>1</sup>. As a result, they have become trained in satisfying the special technical requirements of military hardware and military services. In the nature of the case, these requirements give secondary positions to cost considerations, which are quite important in the commercial spheres.

For these producers, the most important requirement of any product to be accepted by the single consumer, the Central

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1. The Central Government here means the authority that is responsible for the defense of the nation or country e.g. The Federal Government of U.S. A. and The Central Government of India.

Government, is the performance of the hardware. For example, if a slightly inferior refrigerator is produced by a commercial firm but marketed at half the price of the No. 1 refrigerator, the product will do well in the market. But in the military field, there is no No. 2 missile. The performance of the missile is the sole criteria.

The military market is dominated by a single customer, the Government. Through its procurement decisions, the Government controls the entry of the firms into the defense market, as well as their exit format. The power of the Government to determine the general rules under which the defense producers operate is also considerable. In the United States, one of the two most important factors affecting the ability of a major contractor to enter the military market is its ability to deal with governmental regulations. While the regulations imposed by the U. S. government may be particularly complicated, it is probably the case that most defense producers are more comfortable dealing with a government procurement agency, be it in the civil or the military sector, than with a competitive market situation<sup>2</sup>.

There are a number of other factors which are shared by the defense market in OECD countries which make it difficult for

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2. Ball, Nicole, 'Conversion Outside Sweden' in Thorsson, Inga, In Pursuit of Disarmament : Conversion from Military to Civil Production in Sweden, vol. 2 , Stockholm, Gotab, 1985, p. 77.

defense producers to adapt to civil market. For one thing, price is not the determining factor in sales. Contracts, often signed before the final product is even completely designed, make true cost/price estimates very difficult. Technical capability is the key element in most defense deals. What the customer is buying is R&D capability and the past technical performance of the firm is extremely important when new contracts are awarded. R&D contracts are sometimes awarded to firms in order to keep design teams intact which is an indication of the importance of domestic technical competence. All of this stands in contrast to the civil market where price and ease of production tend to determine the success of a product. The lack of competition in the defense sector further reduces the ability of arms producers to operate in the civil market. "In the United States, nearly two thirds of all major arms contracts were awarded without any competitive bidding at all" <sup>3</sup>.

Also, serving the single, government customer produces a special kind of marketing capability that features negotiation methods more similar to the sphere of diplomacy than to the practices of a commercial market place. Goods are at times sold to the customer not on the basis of the qualities of the goods themselves. The clout of the military industrial complex is a common knowledge all over the world.

Many hardware items are purchased and ordered on the basis of

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3. Ibid p. 77.

this clout. Conversion will require not only a change in the marketing skills but also political will on the part of the governments to cut down military expenditures against the clout of these military industrial complexes.

Lisa R. Peattie writes " In the modern welfare - warfare state, the connection between political and economic power is mediated very directly through military spending. The largest and most technically advanced of the corporations have become directly tied to the military planning apparatus of the State, and has been recurrently pointed out, in their international functioning unfit for operating on any other terms. In the military segment of the economy, the terms of competition are not price and efficiency, but grantcraft and lobbying. The standards of design are responsive to a set of criteria present nowhere else outside the arms economy. Thus, the economic institutions most fitted by their size and resources to exercise power in the world become vassals of the military states. Meanwhile, the state itself becomes dependent on the military build-up as a means for inducing compliance and maintaining the existing order. In addition, military production creates vested interests around jobs among the participants. It was not for nothing that MX production was so arranged as to locate some component of the process in every state of the United

States"<sup>4</sup>.

However, assuming the political will of the governments to cut down defense expenditures, the economic and market nature of the arms industries are going to lead to some economic disturbances. Let us now look into the economic consequences of disarmament.

### ECONOMIC CONSEQUENCES OF DISARMAMENT

Governments all over the world spend huge amounts in the defense sector, the outlay stretching to billions of dollars. Disarmament would eventually lead to a substantial cut in the military expenditure. Economists, market analysts and the makers of fiscal policy have therefore to consider how the economy might otherwise employ the labour, the plant and the physical and human resources that now serve, directly or indirectly, the demands of military establishments.

An increase in personal consumption, expansion of educational and medical services and facilities, acceleration of the rate of investments in domestic economic growth, enlargement of economic aid to under-developed countries - these are only a few

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4. Peattie, Lisa R. , ' Economic Conversion as a Set of Organising Ideas.', Bulletin of Peace Proposals , vol. 19, no. 1, 1988 , p.12.

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of many kinds of demands that would lay competing claims on the productive capacities made available by disarmament. There would be no problem, if for example, the goods that are listed in the typical procurement order from the United States Airforce Missile Base at Cape Canaveral also made up the shopping list of the average housewife. It would be merely a question of maintaining the total level of demand during the transition period. But swords do not serve readily as plowshares. In fact, the military shopping list is very different from the bills of goods presented by the various categories of civilian demands, and these in turn differ greatly from one another. So even if the total level of expenditures were maintained, the shift from military to non-military budgets must be expected to increase the demand for the products of some industries and reduce the demands from the products of others. Furthermore, how the sales and employment figures of various industries will respond to the shift depends upon the proportion in which each type of civilian demands, with its characteristic bill of goods, shares in the increase in total civilian demand.

The composition of the total civilian demand could possibly inhibit the overall increase in the non-military expenditure and so hold the country's economic activity at a lower level, following a cut in the military budget. If most of the money saved were spent in highway construction, for example, a bottleneck would quickly develop in supply of cement; meanwhile, the electronics industry which contributes much to military output but relatively little ( directly or

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indirectly ) to road building, would remain idle. On the other hand, if funds were allocated to a more balanced pattern of demands they would secure more nearly full employment of the available human and physical resources. In the long run, of course, any mismatch between the productive capacity of the individual industries and the changed pattern of demands would be rectified by reallocation of capital and labour. But such adjustments as is well known is quite painful and could take many months or even several years. The loss of time would represent irredeemable loss of real income to individual citizens and to the nation as a whole.

There are two basic problems of adjustments for any economy undergoing disarmament. The first is to maintain aggregate economic demand in the nation despite more or less substantial and progressive decline in demand from the defense sector. The second is to minimize hardships and waste as the human and material resources now devoted to defense find new uses<sup>5</sup>.

The two problems although different in nature and in the policy instruments suited to deal with them, are interconnected. Thus, if there

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5. U. S. Arms Control and Disarmament Agency ( ACDA ) Report, 'The Economic and Social Consequences of Disarmament' in Bolton, Roger E. (ed), Defense and Disarmament : The Economics of Transition , Engelwood Cliffs, N.J., Prentice Hall Inc. , 1966 , p. 69.



is a general inadequacy of aggregate demands, it will be more difficult, if not impossible, to overcome the structural problems of transition. On the other hand, if the transition from national defense efforts to general and complete disarmament should be characterized by persistent structural maladjustment, the effect of measures to maintain aggregate demand of output and employment would tend to be dissipated in inflation. With advanced planning and sensible policies at all levels of government and on the part of business and labour, it should be possible to master both of these problems satisfactorily. It is clear that, if not offset, significant and progressive decline in defense spending would reduce the growth rate of economic activity and quite possibly bring about an absolute decline. In the absence of compensating factors, total demand would be reduced by significantly more than the reduction in defense spending. Declining defense spending would be reflected in reduced income for the employees of the defense industries and of the industries supplying, directly or indirectly, the defense contractors. Decreases in personal income would be moderated, to some extent automatically, by reduced taxes and increased transfer payments; but, with existing legislation, a one dollar reduction in defense spending would cause, directly or indirectly, about a one dollar reduction in personal consumption. In addition, the decline in aggregate demand would lead to a reduction in capacity and inventory requirement and thus to some fall in the rate of investment. In the event of disarmament it would be necessary to encourage stimulate, or create those offsets which would contract

these negative factors to the maximum extent and absorb the slack in the economy.

Government policy will have a vital role in dealing with the problems of aggregate demand. Sensitive response to the particular economic facts and forces prevailing prior to and at the commencement of, the disarmament and far-sighted action can contribute strongly to the creation of the conditions which will allow the un-met needs of society to be translated into the kind of economic demand that will, potentially, more than take up the slack caused by the progressive decline in national defense spending. Determination of the precise combination of measures to support the aggregate demand under a disarmament program is in itself a complex process requiring advanced planning, continuing evaluation of economic development and likely economic impacts, and political decisions. The success of any programme of maintaining demand will also be dependent on the success of parallel measures to deal with any structural problems such as regional or local concentration of dense activities, and industry and manpower specialisation.

At every step there will be the problem of making choices, of striking the most appropriate balance between numerous possible courses of action, each of which have a different impact on the economy. " Thus, either an increase in government expenditure for goods and services or a decrease in taxes increases aggregate demand and brings additional resources into employment. Either

action has a multiplier effects which is greater than its initial impact. Thus, either tax reduction or increased government spending indirectly stimulates almost all categories of private demand, and, in particular, private consumption. But direct effect of a tax reduction is to employ resources for a private consumption or investment, while the direct effect of government spending is to employ resources on production of public goods and services"<sup>6</sup>.

The proper balance between tax reduction and increased public civilian expenditures will involve an economic and political evaluation of the relative priorities of the goods and services which would be purchased by households and businesses if their incomes were greater, as against those of public goods. Similarly, the proper balance between reduced personal and excise taxes, and a policy of easy money on the other hand will be governed, generally, by the relative importance accorded respectively to consumption and investment.

Any considerable change in the composition of final demand is bound to require some degree of structural adjustments as regards both manpower and physical facilities, and it may entail geographic redistribution of production and related activities. Actually the economy is constantly experiencing structural changes as a result of

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6. Ibid p. 72.

technological developments, the introduction of new products and services, population developments, and other factors. Taken together, these changes over a period of time are substantial, and it cannot be said that they have always proceeded with a minimum of hardship and waste. Nevertheless, it is clear that they have not prevented the attainment of substantial growth in the economy.

Disarmament could, and probably would, seriously add to the problems of structural adjustment. One of the principal characteristics of the current defense effort is the relatively high concentration of its economic impact geographical and by industry. Moreover, a large share of dense work is in the hand of specialised defense contractors whose product and expertise may not be readily adaptable to production for a civilian market. Under the circumstances, disarmament will require some shifting of manpower to new industries, occupations and possibly even to new locations. Many plants will have to convert to new lines of production, and to the extent that such conversion on existing sites is not possible or desirable, relocations, and in some cases, liquidations may be in order; also, it is to be expected that new industries will have to be encouraged to establish themselves in many areas where defense production is now concentrated.

These structural adjustments would be faced in the context of the sizable increase in labour force and in automation which is expected to develop over the coming years.

It will be desirable to bend every effort to reduce the friction in the process of adjustment to a minimum, in order to minimise hardship and waste, and as another means of maximising the benefits of disarmaments.

### CONVERSION - THE MEANING

Economic conversion usually refers to the transfer of labour, capital and other productive resources from unproductive military use to alternative civilian - oriented economy. Seymour Melman says<sup>7</sup> "Economic conversion from military to civilian economy includes the formulation, planning and execution of organisational, technical, occupational and economic changes required to turn manufacturing industry, military bases and other facilities from military to civilian use'. Lloyd J.Dumas<sup>8</sup> views economic conversion as a strategy for making peace possible by concretely reassuring those who directly fear loss of their own jobs as a result of cutbacks in military spending, as well as the much larger segment of the population who fear that such cutbacks will

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7. Melman, Seymour as quoted in Peattie, Lisa R., 'Economic Conversion as a Set of Organising Ideas'. Bulletin of Peace Proposals , vol. 19, no. 1, 1988, p. 11.
  8. Dumas, Lloyd J., 'The Political Economy of Reversing the Arms Race' in Dumas Lloyd J. (ed) The Political Economy of Arms Reduction : Reversing Economic Decay. Boulder, Colorado. Westview Press, 1982, p.146.

generate unemployment ( or broader economic recession or depression).

Economic conversion, so defined, can be seen as a special case of the broader problem of 'economic transition'. the transfer of productive resources among any specified set of alternative uses. Yet it is a particularly important special case because of the economically parasitic effects of the production of military goods and services, not to mention the devastating effects of their use, made ever more likely by their continued development and accumulation. There is no transfer of resources that stands as such a crucial prerequisite to both economic viability and physical survival.

Michael G. Renner<sup>9</sup> of the World Wide Institute, Washington D.C. however takes conversion in a broader sense " Economic Conversion most immediately, is concerned with the changeover from military to civilian economy. However, in a broader sense, it is also concerned with the kind of civilian economy to emerge. For to prevent a return to using military means to 'settle' conflicts, it is advisable to prevent those conflicts that arise from fundamental

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9. Renner, Michael G. , ' Conversion to a Peaceful Economy : Criteria, Objectives and Constituencies', Bulletin of Peace Proposals , vol. 19 , no. 1, 1988 , p. 130.

inequities. Economic conversion, then, involves more than just a move away from all things military. It is an essential tool to restructure an economy, to create a more just, equitable, and sustainable society".

### CONVERSION AND RECONVERSION

Conversion can be distinguished from reconversion which means that firms which were primarily civilian producers started manufacturing military products due to war time demands, shift back to their original civilian production. Seymour Melman says<sup>10</sup>, "The problem of conversion from military to civilian work is fundamentally different from the problem that existed after World War II. At that time, the issue was reconversion; the firms could and did go back to doing the work they had been involved in before the war. They could literally draw the old sets of blueprints and tools from the shelf and go to work on the old products. At the present time, the bulk of military production is concentrated in industries, firms, or plants that have been specialised for this work, and frequently have no prior history of civilian work. Therefore, the

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10. Melman, Seymour , ' Characteristics of Industrial Conversion Problem'. in Melman, Seymour (ed) The Defense Economy : Conversion of Industries and Occupations to Civilian Needs . New York. Praeger, 1970, p. 7.

problem is one of conversion-redesigning the total operation of enterprises and parts of enterprises. Some firms are primarily or totally specialised in military work. These include firms like General Dynamics, Martin Aircraft and other principal missile and military electronics manufacturers.

Immediately after World War II, the US economy underwent a remarkably successful large scale transition from military to civilian-oriented production. In the words of Kenneth Bouldin <sup>11</sup>"... in one year, 1945-46, we transferred 30% of the GNP from the war industry to civilian uses, without unemployment ever rising above 3%, an astonishing testimony to the flexibility of the American economy and also to some wise planning by the Committee for Economic Development at the local level".

It is clear from this experience that even massive redirections of a heavily oriented national economy are feasible without extraordinary disruption. Yet this experience must be interpreted with great care if it is to guide present day policy. For the US in that period underwent what is most accurately called 'reconversion', and this is quite different from the problem of 'conversion' that faces most highly military-oriented economies today.

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11. Boulding, Kenneth E., in Foreword to Dumas, L. J. (ed) The Political Economy of Arms Reduction : Reversing Economic Decay Boulder, Colorado. Westview Press, 1982 p. xiii.



As the US involvement in World War II expanded, firms normally involved in civilian production began to switch to producing military equipment instead. All of the labor force at such firms, from production and maintenance workers to engineers and managers were accustomed to serving civilian commercial markets. That is what they had spent most of their working life doing. Though production equipment and facilities were modified, that had been originally designed and configured for effective civilian production. When the war ended, these firms went back to doing what they were used to doing. that is they 'reconverted'. For them, military production was a temporary aberration from the norm of civilian commercial marketplace.

The situation is quite different today. There are generations of managers, engineers, scientists, production and maintenance workers whose employment experience include little or nothing but military-oriented work. Many contemporary military industrial firms have never operated in civilian commercial markets. Even those firms that are major producers of both military and civilian products ( e.g. Boeing and Rockwell International ) typically have operationally separate, insulated divisions which in effect function as wholly owned subsidiaries reporting to same overall management. For the major military producers, serving the military is no short lived aberration - it is the norm.

It is also important to note that during World War II, both the means of production and the technologies involved in designing and

producing military goods were still fairly similar to those in the civilian sector. Over the past forty five years, these facilities, equipment and technologies have rapidly diverged. The physical plant, machinery and technologies applied in a modern military industrial firm are markedly different from what is common in a modern civilian manufacturer. The technologies embodied in the designs of the products themselves are even more different. "The problem of shifting from military to civilian production has accordingly become one of conversion, shifting to something new, rather than reconversion, returning to something familiar"<sup>12</sup>.

Forty five years of the arms race have made the problem of transition from military production more difficult, but there is no need to be discouraged. There is little question that it can be done, and done smoothly and efficiently. It is simply necessary to approach the problem more carefully.

### HISTORY OF CONVERSION

The history of conversion in the modern era can be traced back to right after the World War II. Massive demobilisation took place. But what happened generally was not exactly conversion but reconversion, as has been explained earlier. Anyway, it will be fruitful to take a brief look at the post World War II experience. It is

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12. Dumas, L. J., 'Economic Conversion : The Critical Link' Bulletin of Peace Proposals , vol .19 , no. 1, 1988 , p. 4.

generally agreed that the most successful and the wide spread experience with the conversion of resources - financial, material, and human - from the military to the civil sector occurred in the end of World War II. Within a relatively short period, millions of soldiers had been demobilized, defense budgets had been sharply reduced, and many defense related industries were producing goods for the civil market. "In the United States, the first postwar year saw defense expenditure cut by 80% and some 9 million men and women released from military services ( around 14% of the total labour force). Unemployment arose on account of demobilization but never reached 4% of the labour force. Similarly, the large reduction on the defense sector caused gross national product shrink, but only slightly as other economic activities replaced much of the economic stimulus which had previously come from the defense sector" 13.

In the United Kingdom, the Government reported that by the end of 1946, some 4.3 million had been demobilized while 3.5 million had been released from the defense-industrial sector. In 1945, unemployment was less than 1% of the labour force. By 1946, it had risen substantially to 5% but two years later it had once again

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13. The U.S. Experience is summarised in Economist Intelligence Unit ; 'The Economic Effescts of Disarmament ' London 1963, pp. 121-123.

dropped to 1.8%<sup>14</sup>.

In the Soviet Union, the conversion to a peacetime economy took place under the aegis of the Fourth Five-Year Plan. Soviet figures show that at the end of this plan period in 1950, budget outlays on economic functions had more than doubled while those on defense functions had declined over by one-third<sup>15</sup>.

According to conventional wisdom, postwar conversion in the industrialised market economies occurred more or less by itself, fueled by the demands from the civilian market. While demands for the civil goods played an important role in the conversion process, the situation was somewhat complex than this characterisation suggests. It is not sufficient that people want to buy goods; they must also have the financial resources to enable purchase to be made. During the war, consumers had built up cash reserves because the emphasis on production for the war

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14. The Information relating to the United Kingdom comes from, Economist Intelligence Unit : The Economic Effects of Disarmament , London, 1963, pp. 117 and 119-120.

15. The information on the USSR comes from Kusky, Alexander and Khlusov, Mikhail, ' Post War Economic Reconstruction in USSR : Reconversion in a Socialist Economy ' in 'Socio-Economic Problems of Disarmament', Soviet Peace Committee, Disarmament Commission, Vienna, Institute for Peace 1979 p. 3.

effort had left the civil market relatively starved for goods. Once civilian sector production increased in 1946, consumers were not only willing to buy a wide variety of goods; they also had the money to do so. Another important factor that contributed to the smooth transition from that of the wartime to a peacetime economy was that many people who were employed during the war - particularly the women and the men of the retirement-age voluntarily left the labour force, after the war. For example, in the United States, the number of women employed in the non-agricultural jobs dropped by two million between August 1945 and February 1946. Female unemployment however increased by only 110,000. In Britain, just over one million women left the labour force between 1945 and 1948 while the number of unemployed women increased by 13,000 only. Had women chosen to work outside their home after World War II in as great numbers as they did during the war, the unemployment statistics of the late 1940s would have looked very different. In Britain, the addition of one million women to the unemployment registers in 1948 would have produced unemployment figures three and one-half times larger than the actual level (i.e. 6.5% as opposed to 1.8%)<sup>16</sup>.

While much of the postwar conversion process was left to the operation of the market forces, a number of governmental measures were undertaken to facilitate it. Some of the potential of

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16. Economist Intelligence Unit : The Economic Effects of Disarmament., London 1963, p. 120.

the labour market was reduced by staggered demobilizations and adult education programs. Interest rates were reduced to deter saving and encourage investment. Investment was further encouraged by the refunding excess profits taxes and consumption was encouraged by reduction of income tax rates. Incentives were offered for some mass production of consumer durables. Still, it has been argued that, at least for Great Britain, the most important Governmental activity was to channel demand into specific areas; nothing was necessary to sustain demand<sup>17</sup>.

Despite the general success of the post-World War II conversion process, some problems did arise. In the United States, the more traditional industries such as steel, rubber and automobiles which had originally converted from the civil to the military sector to contribute to the war effort experienced relatively few problem in reconverting and taking advantage of the pent-up demand for civil goods which characterised the immediate postwar period. The more specialised firms - particularly the aircraft producers - never really succeeded in converting to the civil market. Different firms attempted to adapt to the civil market in different ways. Some sought to the advantage of their ability to produce light metal goods by developing and marketing such diverse items such as buses, trolley cars, marine engines, bottle labelers, dry cleaning machinery, and artificial hands. Other firms became sub-contractors for civil-sector firms. On the whole,

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17. Ibid pp. 119-121.

however, the income from these new ventures was disappointing. They did not attain a significant fraction of the sales attained during the World War - II; the profits were often negative. This was illustrated by the experience of the aircraft companies during the initial postwar adjustment period, 1946-1948, when sales declined to a tenth of their former peak and losses accumulated to over \$ 50 million<sup>18</sup>.

Most of the diversification activities of the major specialised defense contractors, which were begun at the end of World War II, were abandoned as unsuccessful or marginal, or sold to firms traditionally oriented to industrial or consumer markets.

It was the Korean War which saved many of these firms. Although the military build-up which ensued was more limited than that which had occurred during World War II (i.e. 10-15% of GNP devoted to the defense sector in the early 1950s compared to 45% during World War II), it set the pattern which has characterised the military-industrial sector in the United States for the last 35 years<sup>19</sup>.

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18. Ball, Nicole, 'Conversion Outside Sweden' in Thorsson, Inga, in In Pursuit of Disarmament : Conversion from Military to Civil Production in Sweden vol. 2 , Stockholm, Gotab 1985, p. 73.

19. Ibid p. 73

At the end of the war there was a short period during which it seemed that the traditional pattern of cutbacks in spending to low peacetime levels would be renewed. But two major influences intervened to alter the historical pattern. Peace gave way to Cold War, as the United States and the Soviet Union confronted each other in Europe and elsewhere. The Soviet threat to the United States interests was seemingly confirmed by the Berlin Blockade of 1948 and the first Russian atomic tests in the following year. The start of the Korean war in 1950 unleashed a surge of defense spending by the United States that was only partially related to the war itself. Defense budget jumped to over \$40 billion, establishing a level for "peacetime" military spending that in real terms (i.e. corrected for inflation) has been constant, except for the bulge caused by the Vietnam War, until the upward trend beginning in 1976. This high and relatively steady level of spending formed the basis for the establishment of a "permanent" defense industry<sup>20</sup>.

In West Germany, the tensions between East and West Germany led to the decision to allow West Germany to rearm. This meant that the defense producers which had not succeeded in converting to some form at the end of the World War - II were able to enter the

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20. Reppy, Judith, 'The United States' in Ball, Nicole and Leitenberg, Milton (ed) The Structure of the Defense Industry : An International Survey London , Croom Helm 1983, pp. 22-23.



market when arms production was legalised in 1951<sup>21</sup>. This, however, involved only a small number of companies.

At the end of the Korean War, the conversion problems were smaller since less of the United States economy had been mobilised to contribute to the war effort. In addition, some excess consumer demand was built up during the years that the war was being fought and tax reductions encouraged consumption even more. Unemployment rose from 5.5% in 1954, but within a year it dropped to 4.4%<sup>22</sup>. Nonetheless, the more specialised defense producers continued to experience problems in finding satisfactory civil-sector markets. They succeeded in avoiding some of the mistakes of the immediate post World War -II period by focusing on relatively high-technology products, but there were still difficulties as exemplified by the aircraft industry.

The largest diversification efforts were represented by the closest

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21. Brozka, Michael 'The Federal Republic of Germany' in Ball, Nicole and Leitenberg, Milton (ed) The Structure of the Defense Industry : An International Survey London , Croom Helm 1983, p. 111.

22. Ball, Nicole, 'Conversion Outside Sweden' in Thorsson, Inga, in In Pursuit of Disarmament : Conversion from Military to Civil Production in Sweden vol. 2, Stockholm, Gotab 1985, p. 74.

adaptations of military work- aircraft for the airline and the executive markets. The other diversification projects also typically were limited to industrial markets. These included industrial electronics, small gas turbine gas engines, nuclear reactors, wall panels for commercial buildings, and heavy-duty land vehicles. Despite the variety of these latter efforts, the non-government sales of the major aircraft companies during the middle of 1950s were almost entirely transport aircraft to commercial airlines. Most of these industrial diversification efforts outside the aerospace field have since been abandoned. The surviving diversification programs continue generally at marginal levels - either actually losing money, barely breaking even, or at best showing profit below typical military business returns<sup>23</sup>.

Reduction in the defense expenditures in the United States in the 1960s and the growing interest of the United States Government in the uses of space led to many aircraft companies to diversify into the space sector. To a large degree, of course, this is not really diversification out of the military sector since so much of the United States aircraft industry is still dependent on military contracts. Comparing the possibility of conversion of the defense-industry in the 1980s with the experience of the post World War II and post-Korean War periods, there are two important points to be made. First, Conversion undertaken now would not occur with the same relative ease as it did following the World War II. The second point is that, despite the differences between the 1940s/ early

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23. Ibid p. 74.

1950s, and the mid-1980s, conversion is far from an impossible task.

### IS CONVERSION POSSIBLE NOW ?

Conversion in the 1980s is far from an impossible task, despite the differences between the current situation and that which was at the end of the World War II. A good deal of research was undertaken over the past 45 years which supports the view that military-related production accounts for a relatively small proportion of total production in countries with domestic arms industries and that a decline in such production would not have serious consequences for their economies. Particular localities and industries where defense production is concentrated would face temporary difficulties but these could be mitigated by adequate planning and compensatory measures (for example, special tax incentives for industries undergoing conversion). There is a good reason to believe that in the long run economies would benefit from the reduction of the military sector since in many cases the same amount of investment produces more jobs in the civil sector than it does in the military sector.

In addition to the above, the release of large numbers of research and development personnel from military-related jobs and their redirection toward socially useful civil-sector goals can only be beneficial. With regard to the United States, for example, it has been pointed out that, the impact of military Research and Development programs on the economy as a whole is probably

more a consequence of the effect of military demands on the overall mix of R & D than a result of identifiable spillover from the military to civilian technology. Emphasis on some areas of technology by the military is by implication de-emphasis on other areas with more purely civilian application. In particular, the position of the aerospace industry as a leader in the performance of R & D is largely the result of military investment in new aircraft and missiles. While the country has reaped the advantages of new technology for air transportation the railroads have virtually become obsolete. This is an illustration of the opportunity cost to the economy of the bias towards military programs in the national program of R & D <sup>24</sup>.

While conversion would be both possible and beneficial for all national economies, one cannot expect that a decline in defense related procurement would automatically be translated into a successful expansion of the defense producers into civil markets. Co-operation between government (at the national and the local levels) and defense producers (management and workers) is vital if conversion is to occur with the minimum disruption for all

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24. Reppy, Judith, 'The United States' in Ball, Nicole and Leitenberg, Milton (ed) The Structure of the Defense Industry : An International Survey London , Croom Helm 1983, p.35.

concerned<sup>25</sup>. Because defense technology has become increasingly specialised over the past forty five years and because the current economic situation is more problematic than the situation at the end of the World War II, the more advance planning that occurs in conjunction with conversion efforts, the more successful these efforts are likely to be.

Despite the need for planning, however, the difficulties associated with conversion should not be exaggerated. Modern industrial economies constantly undergo change and are thus not entirely unequipped to deal with the sorts of transitions implied in the reduction of the output of military industries. Conversion and redeployment is not a phenomenon associated uniquely with disarmament. Any form of social and economic development represents a continuous process of conversion. Particularly in the modern industrial economies, the factors of production must respond continuously to the development of new products and the phasing out of old ones and to the introduction of new production techniques. Indeed, the pace of the technological changes and the extraordinary mobility of capital in the recent decades has led most countries to undertake measures to facilitate necessary changes in the structure of industry and to

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25. Ball, Nicole, 'Conversion Outside Sweden' in Thorsson, Inga, in In Pursuit of Disarmament : Conversion from Military to Civil Production in Sweden, vol. 2, Stockholm, Gotab 1985, p. 81.

adopt legislation to provide some protection for workers affected by such changes. "The point here is to stress that modern industrial economies including, in particular, the economies with the largest military establishments, have a considerably inbuilt capacity to convert resources from one activity to another"<sup>26</sup>.

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26. Ibid p.81.

## **CHAPTER - III**

# **DYNAMICS OF CONVERSION**

## **DYNAMICS OF CONVERSION**

Conversion is feasible and desirable, given the present level of destructive capability on the one hand, and the growing scarcity of basic needs of life on the other hand. But just wishing conversion is not enough. Given the nature of military bases and military production as has been examined earlier, a lot of planning has to be done for conversion to be feasible. The actual process of conversion differs between countries and industries. It is not possible to examine the actual detailed planning that will go with the conversion of economies and industries. Instead, this chapter will try to look at the conversion problem from a broader angle. A brief sketch of the problem of conversion of industries, of capital equipment, of nuclear facilities, of occupations, of marketing, along with the necessary legislation, will be undertaken here.

### **CONVERSION OF INDUSTRIES**

Defense-related production is not only concentrated in particular regions within each producer country; it is also concentrated within particular industrial sectors and in individual firms. For the United States, the industries most dependent on defense-related work have been: ordnance, aerospace, electronics, motor-vehicles, petroleum refining, chemicals, rubber, construction, electric equipment and transportation services. Changes in defense policies and weapons technology have caused shifting reliance on



the part of the defense establishment on various industrial sectors. For example, aircraft production was important during the Korean war; missiles came to replace aircraft in the 1960s. The war in Indo-China caused outlays on strategic weapons to drop relative to the expenditure on more conventional arms and ammunition. While the Department of Defense was once a most important customer of the motor-vehicle industry, it now consumes less than 2% of that industry's output. Similarly, although computers were initially developed on military demand, the defense sector currently accounts for a small amount of its sales<sup>1</sup>.

Defense production exhibits similar industrial concentration in all producer countries and the rankings of industries in terms of relative dependence tend to be quite similar across national boundaries. The aerospace and electronics industries are heavily dependent on military orders. In Italy, the defense sector is an important customer for the aircraft, electronics and engineering industries. A similar pattern exists for Great Britain.

Defense production in the former Soviet Union was believed to be concentrated in nine of the twenty machine-building and metal-working sectors of industry; aviation, shipbuilding, electronics,

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1. Reppy, Judith, 'The United States' in Ball, Nicole and Leitenberg, Milton (ed) The Structure of the Defense Industry : An International Survey London , Croom Helm 1983, p. 38

radio, arms and ammunition, general machinery, medium machinery, communication equipment and machine-building<sup>2</sup>.

Within sectors, both those heavily reliant on defense orders and those minimally involved with the military, defense-related production tends to be concentrated in a relatively few firms. Thus, aggregate industrial-sector figures can either over or understate the reliance of any individual firm on defense orders. It has tended, at least in the United States, to be the middle-sized firms and not the largest corporations which have depended most heavily on military orders as a percentage of total sales. Different patterns of firm-level dependence on the military sector are evident in Western Europe. The West German procurement agency, the BWB- officially follows the policy of limiting individual firms' on arms production. Although the BWB has not been successful as it should have been, this policy, along with the general trend towards concentration in West German industry, may have resulted in a pattern of dependence among the arms producing firms in the former FRG, which is somewhat different from that in other countries, at least in Western Europe. Among the ten largest arms producing firms in FRG, only one was more than 75% dependent on arms production. In France, the comparable figure is five, and in Italy and United Kingdom, it is four each. Four of the

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2. Holloway, David, 'The Soviet Union' in Ball, Nicole and Leitenberg (ed) The Structure of Defense Industry : An International Survey , London, Groom Helm , 1983 p. 58.

top ten West German firms were less than 50% dependent on arms production. Among the 30 largest firms, seven are more than 75% dependent on arms production and sixteen are less than 50% dependent. If smaller arms producing firms are included, there are a large number of firms which are totally or almost dependent on arms production, especially those who are in electronics, infantry weapons production, and subcontractors for tank building. These smaller firms have 100 to 1000 employees. Some of them are located in economically depressed regions<sup>3</sup>.

The United States Arms Control and Disarmament Agency (ACDA) commissioned studies during the 1960s of the ways in which specific industries can be expected to adjust with the reduction in defense-related procurement. The electronics industry, shipbuilding and metal-working machinery industry were chosen for special study. The metal-working machinery study discovered that, based on 1964-1966 sales data, this industry would not lose more than 4% of its sales with a 25% across-the-board reduction in military procurement. The prognosis was somewhat more guarded considering the actual attempts at diversification within the electronics sectors. Full 80% of the electronics firms surveyed in 1965 had attempted to diversify into non-defense markets. Those

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3. Brozka, Michael 'The Federal Republic of Germany' in Ball, Nicole and Leitenberg, Milton (ed) The Structure of the Defense Industry : An International Survey, London , Croom Helm 1983, p. 129.

Firms that had diversified into the space market tended to be more successful than those who sought to expand into non-governmental markets. Furthermore, the firms which diversified by buying or merging with the civil-sector firm were more likely to succeed than those who attempted to produce new products with the existing plant and staff. Smaller companies had a higher success rate than larger ones, apparently because they were better able to produce components and instruments for which there was well-established demand in the civil-sector<sup>4</sup>.

In terms of conversion, there are at least two important reasons as to why it is important to know which industrial sectors and which firms within those sectors are most dependent on military orders. The first relates to the conversion-planning process. Converting a reasonably large facility from military to civil production can take between one to three years after the conversion plan is developed. To facilitate the conversion process, advance planning is clearly desirable. Faced with declining orders in the military sectors, firms would thus be able to move quickly into the implementation stage of conversion.

Accurate information of defense-dependency of individual firms

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4. Ball, Nicole, 'Conversion Outside Sweden' in Thorsson, Inga, in In Pursuit of Disarmament : Conversion from Military to Civil Production in Sweden, Report by special expert vol. 2, Stockholm, Gotab, 1985, p. 92.

and industrial sectors is also important, once the conversion process gets under way. Governments at all levels should know where to target their conversion assistance. Firms that are subsidiaries of large corporations which are not as a whole heavily dependent on defense orders should theoretically require less assistance than the medium-sized and smaller firms which do not have the financial backing of a corporate entity to help them through the transition period. Similarly, if governments intend to encourage firms to move into particular new product areas, it is important to know which branches of the industry will be the most affected by procurement cutbacks so that plans to stimulate these sectors will be effective. Some sectors may relatively require little governmental assistance - like the metal-working machinery industry, while others such as aerospace, might need relatively more.

#### CONVERSION OF CAPITAL EQUIPMENT

Some of the industrial equipment and facilities currently employed in the service of the military are sufficiently general in purpose to be directly used in civilian-oriented work. But some, such as certain types of highly capable machine tools, specialised shipbuilding facilities and specialised equipment for working with extraordinarily toxic materials such as plutonium, are not so directly transferable. As to machinery whose civilian applicability suffers mainly from the excessive cost derived from its excessively high performance capability, the equipment should be useable for

civilian operations if some sort of special one-time writeoffs or tax breaks are allowed to overcome the cost penalty.

Those industrial facilities which do not so much possess such excess capabilities as the wrong capabilities will have to be reconstructed, but that cannot be done until specific plans have been developed for the particular alternative purpose to which the facilities are to be turned. Similarly, military bases are unlikely to be appropriate, without some degree of alteration, for efficient performance of a civilian oriented activity<sup>5</sup>.

There are two major categories of public policy, which may be relied upon to help transfer defense-industry resources to non-defense pursuits. One category of programmes and policies covered various attempts to aid defense contractors in diversifying into commercial markets. The other consists of efforts to transfer the research and development and other resources of defense contractors to companies and organisations in other parts of the economy. Both of these types of actions would, of course, be enhanced by effective application of general monetary and fiscal policies which would maintain the over-all levels of demand,

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5. Dumas, Lloyd J., 'Conversion of Military Economy : United States ' in Dumas Lloyd J. (ed) The Political Economy of Arms Reduction : Reversing Economic Decay. Boulder, Colorado. Westview Press, 1982, p.32.

income, and employment in the nation<sup>6</sup>. Given a cutback in defense spending, there is a variety of actions which, the government could undertake to help defense producers. This would entail awarding them with large amounts of non-defense research and development contracts or even establishing new requirements for non-defense goods.

Defense-industry executives state that there are major civilian pursuits where their massive engineering competence is needed and could be employed. Examples include large-scale constructions, mining of the ocean floor, sea-farming, further air and space travel, integration of transportation systems, revitalising of the merchant marine, improved communication and weather forecasting, nuclear electric power, salt conversion, airtraffic control systems, air and water pollution control, urban development, and programmes of technical assistance for developing countries. Government actions designed to aid the individual defense companies in converting to civilian activities may be the most direct and effective way of absorbing potential unemployment in the defense industries and of meeting the short-run requirements of economic stability.

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6. Murray, Weidenbaun L. , 'Transferability of Resources to Civilian Use' in Bolton, R. E. (ed) Defense and Disarmament : The Economics of Transition , Englewood Cliffs, N.J., Prentice Hall Inc., 1966, p. 109.

A long-range national program to encourage the development of alternate demands for any potentially surplus defense-industry resources would require :

- (a) developing public policy on utilising resources that would become available, and the respective roles of industry and government,
- (b) assigning responsibilities to the various government agencies involved, defense as well as nondefense, and
- (c) developing mechanisms, such as those suggested, for carrying out these responsibilities both in the private sector as well as in the public sector <sup>7</sup>.

### CONVERSION OF NUCLEAR WEAPONS FACILITIES

Nuclear weapons facilities represent an interesting special case. In planning for conversion of nuclear weapons facilities, there tend to be two common problems specifically related to physical facility<sup>8</sup>.

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7. Ibid p. 112.

8. Dumas, Lloyd J., 'Conversion of Military Economy : United States ' in Dumas Lloyd J. (ed) The Political Economy of Arms Reduction : Reversing Economic Decay. Boulder, Colorado. Westview Press, 1982, p.34.



The first is the existence of plant and equipment highly specialised for the storage, handling and processing of nuclear materials. At the manufacturing end, there may be gloved boxes, dust and fume control devices, remote manipulators, etc. At the storage and shipping and their earth-covered storage bunkers, special handling containers, etc. and at the waste storage facilities, large - and now thoroughly contaminated - tanks and associated facilities are found. This leads directly to the second problem, the problem of radioactive contamination.

It would be extremely surprising if there were a single nuclear weapons facility that was untouched by continuing radiation problem. It is certain that manufacturing facilities and waste facilities dealing with nuclear material house at least some equipment that is heavily contaminated. In addition, leakages of radioactive material into the soil at all such locations are a virtual certainty, rendering portions of the site and perhaps associated water supplies hazardous. The extent to which it is possible to effectively decontaminate this equipment and these areas can only be determined by thorough analysis of each facility. If there are storage areas from which nuclear material cannot be removed for health, safety or whatever reasons, extreme care must be taken to avoid establishing new activity on the site that could threaten their integrity. And if such materials have already been lost into the immediate environment, care must be taken to avoid further dispersal in the process of modifying the facility or in the nature of the new activity to be established there.

The meaning of both these problems is that some parts of nuclear weapon facilities may have to be reckoned as a dead loss in planning conversion. But this is not equivalent to saying that activities carried on at such facilities are non-convertible. Even if the whole physical facility were unusable for productive civilian alternatives, a rare event, the labour force is an extremely valuable resource.

Few studies have been conducted on economic conversion of nuclear weapons facilities, and none has been systematically implemented. Nor have any of these studies addressed the issue of impact of a complete cessation of production of weapon grade materials.

A conversion scenario should address the possibility of converting some of the complex to civilian work by transferring unused or 'excess' resources to applicable projects. Possible uses for the process-oriented facilities might include : ethanol fuel production; alternative energy R & D; municipal solid waste treatment and disposal and hazardous waste treatment and disposal. Of course, a careful inventory of the plant, equipment, and labour resources will have to precede any conversion study, followed by engineering feasibility study and marketing survey to assess the

regional and national market<sup>9</sup>.

Perhaps the most comprehensive conversion study of a nuclear weapons production facility was done by Battelle Columbus Laboratory for the Department of Energy and Rockwell International for the Rocky Flats Plant in Colorado<sup>10</sup>. The object of the study was to assess the impact of relocating the production facility out of region and to assess the possible reuses of the facility. The Battelle study of the Rocky Flats installations analysed true case studies : a partial relocation of plutonium operations, and a complete relocation of the whole facility. Estimates were developed for the income, output and employment impact of these two cases. The output multiplier was estimated to be 1.21 which means that for every dollar of output produced at the facility that is an additional 21 cents of output indirectly attributable to the effects of the facilities operation. The employment multiplier was estimated to be 1.42, thus, on an average, for every job lost or gained at the facility, the region experiences a corresponding 0.42 loss or gain in employments. The income multiplier was estimated to be 1.71, thus for every dollar change of income produced at the facility,

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9. Bischak, Greg, 'Facing the Second Generation of the Nuclear Weapons Complex : Renewal of the Nuclear Production Base or Economic Conversion', Bulletin of Peace Proposals, vol. 19, no. 1, 1988, p. 93.

10. Ibid. - p. 93.

there is and addition corresponding increase of \$ 0.71 in the region<sup>11</sup>.

Most recently in Ohio, a group of trade unionist and community groups began a study of conversion potential of the Uranium enrichment plants at Piketon, Ohio and Paducah, Kentucky. The project, known as Atomic Reclamation and Conversion Project, was begun in 1983 with the recognition, that the decline of nuclear power industry posed a decisive threat to the future of these plants. Indeed, the one plant at Piketon has enough capacity to meet all the current demands for enriched Uranium. Faced with the prospect of a stagnating commercial nuclear power industry, the trade unionists from the Oil, Chemical and Atomic Energy Workers Union set about to devise ways to respond to layoffs.<sup>12</sup>

The Atomic Reclamation and Conversion Project in Ohio and Kentucky is a case of advanced planning by a citizen group composed of workers and members who were concerned about the prospect of the plant's closing in 10 - 15 years. Clearly, with a sagging nuclear power industry and the old high cost gas-diffusion technology in these plants, the ARC project was a timely application of conversion planning.

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11. Ibid. p. 94.

12. Ibid. p. 92.

## CONVERSION OF OCCUPATIONS

Any substantial measure of disarmament will cause displacement of workers which can come under the general heading of functional unemployment - rather than seasonal or cyclical unemployment. This means that it results from the imperfections in the labor market in connection with substantial shifts in the demand for labour. Some authors use the term "structural" unemployment to designate that portion of frictional unemployment that may represent a long-run addition to standard frictional unemployment. In that sense, the disarmament-created unemployment may be called structural. Aggregate demands for goods and services in the economy as a whole may or may not drop, according to whether or not the funds no longer spent on armaments are spent for other purposes. If there is a drop in aggregate demand, some unemployment comparable to cyclical unemployment will also occur, resulting from the insufficiency of aggregate demand.

The cornerstone of any policy designed to absorb displaced defense workers as rapidly as possible must be a set of measures aimed at reducing over-all unemployment to a "tolerable" minimum. However, the nature of disarmament-created unemployment is such as to require special caution in applying the standard full-employment criteria and policies. An increase in expenditures designed to offset the cut in defense spendings almost certainly involves the expansion of the sectors of the

economy different from those effected by disarmament. If the displaced labour is to be absorbed, it is necessary that the rate of offset spending be harmonised with the possibilities of expansion in the least elastic sectors of the economy effected by increased spendings. This rate is determined by the volume of idle capacity and by the mobility of capital and labour - to be employed in the expanding sectors of the economy<sup>13</sup>.

The problem of conversion of workers from military to civil occupations requires some knowledge of the different types of workers engaged, e.g., technologists, managers, administrative staff etc. Let us take a brief look at each type, their problems with conversion and how to go about it.

Let us take the case of technologists first. The problem of converting technologists from military to civilian related work mainly stems from the differential requirements for successful military and civilian technological developments. Lloyd J. Dumas says that the present day high technology military products are extremely complex, and are designed with an effort to squeeze

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13. Sturmthalf, Adolf, 'Measures to Deal with Labour Displacement in Diarmament' in Benoit, Emile and Boulding, Kenneth (ed) Disarmament and The Economy , New York, Harper and Row, 1963, p.183.

every possible ounce of performance out of the product <sup>14</sup>. This has led to the assignment of large teams of technologists to the design of weapon systems, each, in effect developing and designing a part of a part. Accordingly, the need to become expert in a very narrow range of knowledge has led to extreme specialisation of engineers and scientists engaged in military related work<sup>15</sup>. Along with this there is the procurement policy of cost plus which has lead these technologists to ignore the cost factor.

The civilian market, on the other hand, requires designs with heavy emphasis on the implications of specific designs for the cost of producing the ultimate product. This implies that designers, rather than being extremely specialised, should have a fairly clear concept of the overall design of the product and the interactions of its sub-componants. This, together with the basic understandings of the effort on cost of modifying the design in one way or another, will enable them to trade off changes in one part of the design against changes in the other to achieve desired product performance at the lower possible cost. Keeping production cost down enables the price to be kept at the level, which will make the product attractive to the potential customers, and hence bring

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14. Dumas, Lloyd J., 'Conversion of Military Economy : United States ' in Dumas Lloyd J. (ed) The Political Economy of Arms Reduction : Reversing Economic Decay. Boulder, Colorado. Westview Press, 1982, p.28.

15. Ibid p. 28.

expanded sales and profit to the firms. The U.S. Arms Control and Disarmament Agency ( ACDA ) identifies three main barriers to transfer of civilian work.

1. Lack of cost-consciousness among defense engineers;
2. View of commercial managers that defense engineers are not well suited to commercial work; and
3. Belief among engineers that the defense environment requires more specialists and the commercial environment more generalists <sup>16</sup>.

Because of these differences, engineers and scientists performing defense work must be retrained and reoriented before they can be successful in civilian research. Complete retraining is clearly not required, since much of the mathematical, scientific, and engineering knowledge they have is also required for civilian work. But despecialisation and increased cost-sensitivity are required to establish firm connection with civilian design realities.

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16. ACDA, 'The Economic Impact of Reductions in Defense Spending' as quoted by Ball, Nicole, 'Conversion Outside Sweden' in Thorsson, Inga, in In Pursuit of Disarmament : Conversion from Military to Civil Production in Sweden, Report by special expert, vol. 2, Stockholm, Gotab, 1985, p. 96.



The length of retraining process depends on the specific individual involved, the nature of his/ her previous education and the particular pair of activities between which the transfer is taking place. Clearly, a civil engineer moving between design work on jet fighters and design of corporate jets will require less extensive retraining than one transferring between jet fighter design to bridge-building. Yet it is possible to give a reasonably generalised range estimate for retraining time. It is unlikely to require less than six months or more than two years. In all likelihood, retraining and re-orientation will ordinarily take a year to a year and half.

The conversion process must also be extended to the educational institutions responsible for the training of engineers and scientists 17. These institutions have altered their curricula to emphasize specialisation, especially in areas and sub-areas of interest to the military, and strongly de-emphasized training in cost related matters. Existing engineering and scientific institutions, once reoriented, should be fully competent to carry out transitional retraining of the sort needed to produce a smooth and efficient conversion process.

Another area where conversion training is required is in the area of

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17. Dumas, Lloyd J., 'Conversion of Military Economy : United States ' in Dumas Lloyd J. (ed) The Political Economy of Arms Reduction : Reversing Economic Decay. Boulder, Colorado. Westview Press, 1982, p.29.

management, which operates in a very different atmosphere from that which prevails in civilian-oriented enterprises. The one customer-orientated produces a very different sales and marketing situation from that faced by civilian firms. Rather than knowing how to run an effective electronic and print media advertisement campaign, how to survey markets for public acceptance of a new product line, how to price a product for penetration into new markets or expansion of existing ones, etc., it becomes critical to know the minute detail of the Armed Services Procurement Regulations, to develop good working relationship with key government procurement personnel, and to be able to lobby effectively<sup>18</sup>. There is little question that whether military-oriented managements are turned to the supervision to the production of the good and services sold in the civilian market place or for civilian use by government, they must be retrained and reoriented as a prerequisite for successful conversion.

For managers, as for engineers and scientists, the length of the retraining process for any given individual depends upon that particular person's education and experience, though it is likely to be somewhat less sensitive in the managerial than in the technological case. Similarly, the nature of the activities between which transference is being made influences both the length and nature of the retraining. Existing business and related schools at Universities should be capable of carrying out this transitional

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18. Ibid p. 30.

educational process, most likely with less internal readjustment than would be required at institutions engaged in retraining engineers and scientists. Management training centers of various large civilian oriented corporations should also be available to aid in the process.

Yet another area where conversion training is required is that of low level administrative workers. "With the possible exception of a few highly skilled workers, the primary problem in channeling production and administrative workers into civilian oriented work lies not in the need for re-education but rather in the number of people involved. Roughly six million people in the United States are directly employed in military related work by the Pentagon, and by military oriented industries. The bulk of these employees are production workers and low level administrative employees including clerical workers" 19.

Reorientation to the standards of work of civilian enterprises will undoubtedly be required since the lack of pressure towards efficiency generated by cost plus pricing permeates the system, and it is possible that additional vocational training will be required for some of these employees. This latter training is not so much to undo the fact of having been employed in military related work as such but rather to bring their skill into more perfect congruence

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19. Ibid p. 33.

with the best civilian opportunities available. The transition problem is simple here because of the lesser nature of the re-education required, but more difficult because many more people are potentially involved.

### CONVERSION OF MANAGEMENT AND MARKETING

The management of a defense industry firm is much more different from that of a consumer product firm. The management in the former case is influenced by conditions like selling to a single consumer, low priority to costs, etc., which renders it unfit to carry on the demands of civilian industries. Kenneth E. Adelman and Norman R. Augustine say " our main message on defense conversion : bulldoze the management, not the factories" <sup>20</sup>. Giving the example of the former U.S.S.R., they say " in 1988 Gorbachev began an energetic campaign for defense conversion. But here he did not move the defense plants into the commercial sectors but incongruously moved atleast 260 civil plants into the defense sector as defense management took over ongoing operations in other fields"<sup>21</sup> . The path was wrong. Expanding the defense sector further into civilian production merely expanded the

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20. Adelman, Kenneth L. and Augustine, Norman R. 'Defense Conversion : Bulldozing the Management', Foreign Affairs , Spring 1992, p. 41.

21. Ibid. p.32.

military industry's role in an already vastly over-militarised economy.

The need for conversion is just the opposite. Commercial sector management and marketing techniques have to be expanded and these ought to be ingrained in the defense sector firms for conversion process to be successful. This is all the more necessary in the former socialist countries, where not only the defense but also the civilian sector firms were under the same plan economy management. Here the management techniques have to become more consumer-oriented in both the sectors.

There is a gap between what the marketing capabilities of a military supplier are and what they need to be if the organisation is to enter in the non-military field profitably. There are clear and profound contrasts between military and non-military marketing. They appear in the resources of the firm allocated to this function, in the two types of products, and in the basic characteristics of the products. In the military market, the firm frequently renders almost a service function as an engineering consultant rather than selling a product it has developed itself<sup>22</sup>. There is only, in effect, one

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22. Rydberg, C. R. 'Conversion of the Marketing Function' in Melman, Seymour (ed) The Defense Economy : Conversion of Industries and Occupations to Civilian Needs , New York, Prager, 1970, p. 238.

customer, influenced by political consideration which are generally absent in the non-military market place. Above all, non-military products face a set of highly cost conscious potential customers, each perhaps with different decision criteria in the placing of order.

The change to non-military products, however, requires not only a re-arrangement of marketing function but also its relative expansion in terms of personnel and corporate backing. This is not to say that such other areas as production and technology should be downgraded. On the contrary, production has to face a much more cost-conscious environment than before in such a product change and technology, financed by the firm itself, has to develop, at reasonable cost, the components and systems to be sold. In the non-military fields technology alone is insufficient. As Willam Kreb points out, the deferences between producing for the military and non-military markets show up in every area, but the major difference is in marketing<sup>23</sup>.

When producing for the non-military market under normal

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23. Kreb, William A.M. 'Should You Diversify into Non-Defense' Space Aeronautics 32, July 1959 p. 21 as quoted by Rydberg, C. R. 'Conversion of the Marketing Function' in Melman, Seymour (ed) The Defense Economy : Conversion of Industries and Occupations to Civilian Needs , New York, Prager, 1970, p. 240.

circumstances, the risk lies with the producer. There are no governmental contracts to support research and development; and there are no guarantees that there will be a market for the products developed. The rapid obsolescence of electronic products and prolonged developmental cycles increase the risk. Full understandings of these risks, how to avoid them, and even how to capitalize them are among major requirements of marketing and sales personnel. It is also necessary for the marketing department to specify the requirements of the product in such a way that enough flexibility for wide market coverage results. Initially specialised military suppliers are out of touch with industrial and consumer markets. They may not be sufficiently aware of present and future needs of customers. They may interpret incorrectly the degree of competitive retrenchment and err on the side of optimism or pessimism in this respect. The finer points of systems designed may not be familiar to them and they may not know what mistakes to avoid. The latter problem may beset both the design and marketing departments. To be successful, market research must be based on sound knowledge and judgment.

Many firms start facing a problem, when they combine technical research and marketing research, which are two entirely different fields. Industrial market research must be conducted by product-oriented, technically competent people; otherwise erroneous conclusions are almost sure to result. The problem lies in the fact that military suppliers don't have sufficient market research experience and outsiders may misjudge the capacity of the firm. As

a result, products lacking in one or more technical features, which should have been discovered in the market research phase, are put into production at considerable expense to the diversifying firm.

An important corollary to market research is to design adequate and suitable distribution facilities. It is one thing to add a new product to an existing and profitable distributive network; it is quite another to attempt the marketing of a product without distributive and service facilities. In the former case, there is already a profit base from which to operate; in the latter case, however the product must support a new distributive network. In addition, it becomes extremely difficult to service products without adequate distributive facilities. Under normal circumstances, it is easier, e.g., to make two industrial sales in each of fifty industrial markets, than in a single market. Yet it is more difficult to service a hundred units in fifty markets than in a single market.

Circumstances such as these either make for unprofitable service operation or the need to turn down orders in markets where service facilities are not yet established. The alternative is to take orders in scattered geographic markets and use those orders as the basis for expanding marketing operations. When this approach is used, the organisation must attempt to generate sufficient sales in those areas to support the mounting overheads resulting from accepting initial orders.



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Inexperience with the market may thus exact a considerable toll.

William Bell has summarized the dangers :

1. High development and engineering costs in adapting products to the needs of the industrial market place.
2. High initial marketing costs including test marketing, recruiting, training and retraining and promotional costs.
3. High cost of physical distribution facilities, including demonstration facilities, branch offices, warehouses and so on<sup>24</sup>.

To overcome these difficulties, a diversifying or converting firm must undertake effective training and retraining programs. Before doing so, however, the proper channel of distribution must be selected. There are two major alternatives, mainly manufacturer's representatives and a direct sales force. Regardless of which

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24. Bell, William 'How to Survive in the Systems Buisness' Control Engineering , Feburary 1959, p. 86 as quoted by Rydberg, C. R. 'Conversion of the Marketing Function' in Melman, Seymour (ed) The Defense Economy : Conversion of Industries and Occupations to Civilian Needs , New York, Prager, 1970, p. 246.

channel is selected, the training of new marketing personnel and the retraining of the existing technical personnel become essential elements.

### LEGISLATION TO HELP CONVERSION

Governments have to come forward not only to aid conversion, but also to ensure its smooth occurrence. Any economic transition is bound to cause hardships not only to the health and profitability of an organisation, but also to its employees. Any government is bound to mitigate the hardship of its citizens. In a free market economy the government cannot interfere directly, but can help the process through legislation.

Economic conversion planning is required so as :

1. to facilitate reconstruction of the damage owing to a permanent war economy,
2. to relieve disarmament negotiators of the fear that a reversal of arms race carries unacceptable economic penalties.

On 28th January, 1987, Congressman Ted Weiss (Democratic .N.Y.) submitted to the United States House of Representatives a proposal for a law on economic conversion, co-sponsored by 49

of his fellow Congressmen<sup>25</sup>. Economic conversion laws according to him were required because major barriers must be overcome to set in motion the necessary planning process for reliable conversion operations, and also to set aside fears of arms producers and their employees.

Major components of the proposed laws were :

1. Mandatory alternative use committees in every military serving factory, laboratory, or base to have a ready blueprint for civilian work in case the military services of the people and the facilities is no longer required ;
2. Advance notification of contract termination by government to factories, laboratories and bases ;
3. Mandatory occupational retraining of the employees to suit civilian needs ;
4. Advanced conversion planning by defense industries ;

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25. Melman, Seymour 'Law for Economic Conversion : Necessity and Characteristics' Bulletin of Peace Proposals , vol. 19, no. 1, 1988, pp. 143- 47.

5. Community economic adjustment planning where military serving industries, laboratories and bases are present in significant clusters ;
6. Decentralised control of alternative use planning;
7. Income maintenance during civilian conversion;
8. Relocational allowances to people effected by military conversion ;
9. National Network for employment opportunity ; and
10. Capital investment planning by government.

He also stressed the need for a National Conversion Commission or similar body within the national Government.

# **CONCLUSION**

## CONCLUSION

An analysis of the theory of armed peace proves its historical bankruptcy. The history of man is the history of continuous warfare or preparations for it. The alleged 'PEACE' that succeeds the conclusion of War, is just a breathing space provided to nations between their preparation for another war, more ruthless and more destructive than the previous one. The successful strategies and the weapons of the previous wars are mastered for future wars, and the failures are analysed and discarded, and new ones are visualised and developed for future wars. Man has now the ultimate weapon in his hand; the nuclear weapon. The irony of it is that, though it ensures the total annihilation of the opponent, it also ensures that there is no victor.

The very logic of nuclear weapons ( i.e. total destruction of both the opponents) has ensured the legions of armed peace theorists who command a respectable following among the policy makers, ( who as yet have never acknowledged the viability of weapon-less peace). However, an analysis of prospective strategies visualised by the decision makers negate the theory of armed peace, not withstanding the nuclear rider added to it. Thus, the United States has visualised various nuclear defense and offense strategies. The strategy of graduated deterrence or the strategy of counter-force strike have important adherents who have rationalised the possibility of successful and a victorious nuclear war.

The above-mentioned attitude are antagonistic towards a stable peace. Hence, the necessity arises urgently for a analysis of the very logic of armaments and an armed peace. Is an armed peace stable, or will it result in War? If no, then is there an alternative.

The proponents of armed peace point out the four decades of relative peace witnessed in the post World War II period as evidence of the practicability of their theory. Notwithstanding the hundred or two hundred minor wars fought after World War II, or the Vietnam War, or the Cuban Missile Crisis, which brought the World to the brink of an nuclear war, one has to just take a look at the earlier theorists who, in the century between the Napoleonic wars and World War I, saw the period as the proof of the theory of armed peace. World War I shattered their theory. World War II shattered Neville Chamberlain's 'Peace with Honour' based on the theory of armed peace. As stated earlier, the relative calm that one witness after the war, is but an illusionary peace, and hence cannot be taken as a proof of armed peace theory. The historical laboratory has proved that hypothesis to be false.

Armed peace, thus, being proved a chimera, necessitated an analysis of disarmament as an instrument for a stable and permanent peace. As has been and pointed out in Chapter 1, security doesn't stem from stockpiling of arms alone, but also comes from economic development and growth. The United Nations study on the Relationship between Disarmament and Development in 1981, developed a broader perspective on the



concept of security beyond military security to highlight the threats and challenges to international and national security systems. These threats could arise from a wide spread reduction in prospects for economic growth, and the morally unacceptable and politically hazardous polarization of wealth and poverty. No nation or state can afford to ignore the fulfillment of basic living needs of its people. For the underdeveloped nations it means providing means for development and for the developed world it could mean maintaining steady level of economic growth. Apart from looking after the needs of the domestic people, the welfare of the world community too has to be taken into consideration. The world is increasingly becoming a global village and no state, developed or underdeveloped, can afford to ignore the developmental needs of the world as whole. This means increased transfer of resources from the developed to the developing world, combined with an increased funding of developmental programs by the developing world themselves. Given the limited nature of economic resources, funding at one source leads to diversifying of resources from another. Thus, an arms race leads to a drain of resources from the developmental needs. Therefore the arms race has to stop. Disarmament is necessary not only to save the world from the overkill capacity of the devastating means of war, but also to save the world from the growing poverty and misery of the peoples, who are denied even the basics of a decent living.

Disarmament alone, however, cannot lead to lasting peace and security in either sense of the term. Means to divert the released

resources have to be found and implemented. Moreover, a cut in defense production will lead to economic hardships for both - firm and its employees of the defense industries. These defense industries have to diversify into other avenues. Causing hardships for the people of the defense industries defeats the whole exercise of economic security. Conversion is the answer to these problems. The defense producers will be required to convert to civilian production. The people, whatever they are, in research, in engineering, in management, or in the workshop, have to be retrained to undertake civilian pursuits.

Conversion today is different from the post World War II experience, which was mainly reconversion as has been explained in the Second Chapter. Given the high-tech specialised nature of today's armaments industry, the conversion process is difficult and complicated, but not impossible. Detailed planning is the prerequisite for any conversion effort. And this planning has to begin now regardless of when disarmaments begins. Conversion requires Governments to be fully aware of their responsibilities to the citizens of their state as well as to the citizens of the world. They have to be forerunners of the conversion effort, which requires extensive studies, of which not much work has been done. Proper economic and other incentives have to be given to the arms industries to absorb the tremors of conversion. Moreover, proper legislation is another requirement for successful conversion policies.

Conversion therefore is a comprehensive process, which involves all sections of people - the government, the planners, the scientists, the engineers, the managers, the workers, and of course the common civilian people. Conversion is not an Utopia, but is the necessary condition for a 'Peaceful World', where nobody is denied the right to a decent living.

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# **APPENDIX**

## WORLD MILITARY AND SOCIAL EXPENDITURES

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*"Tension and violence are on the rise in a world dangerously overarmed and undernourished.*

*Two superpowers, locked into cold war antagonisms, are driving behind an arms buildup without parallel in history. It has created a nuclear menace on hair trigger alert, threatening all life on earth. Local wars are increasingly internationalized and destructive. Half of the governments in developing countries are under military control.*

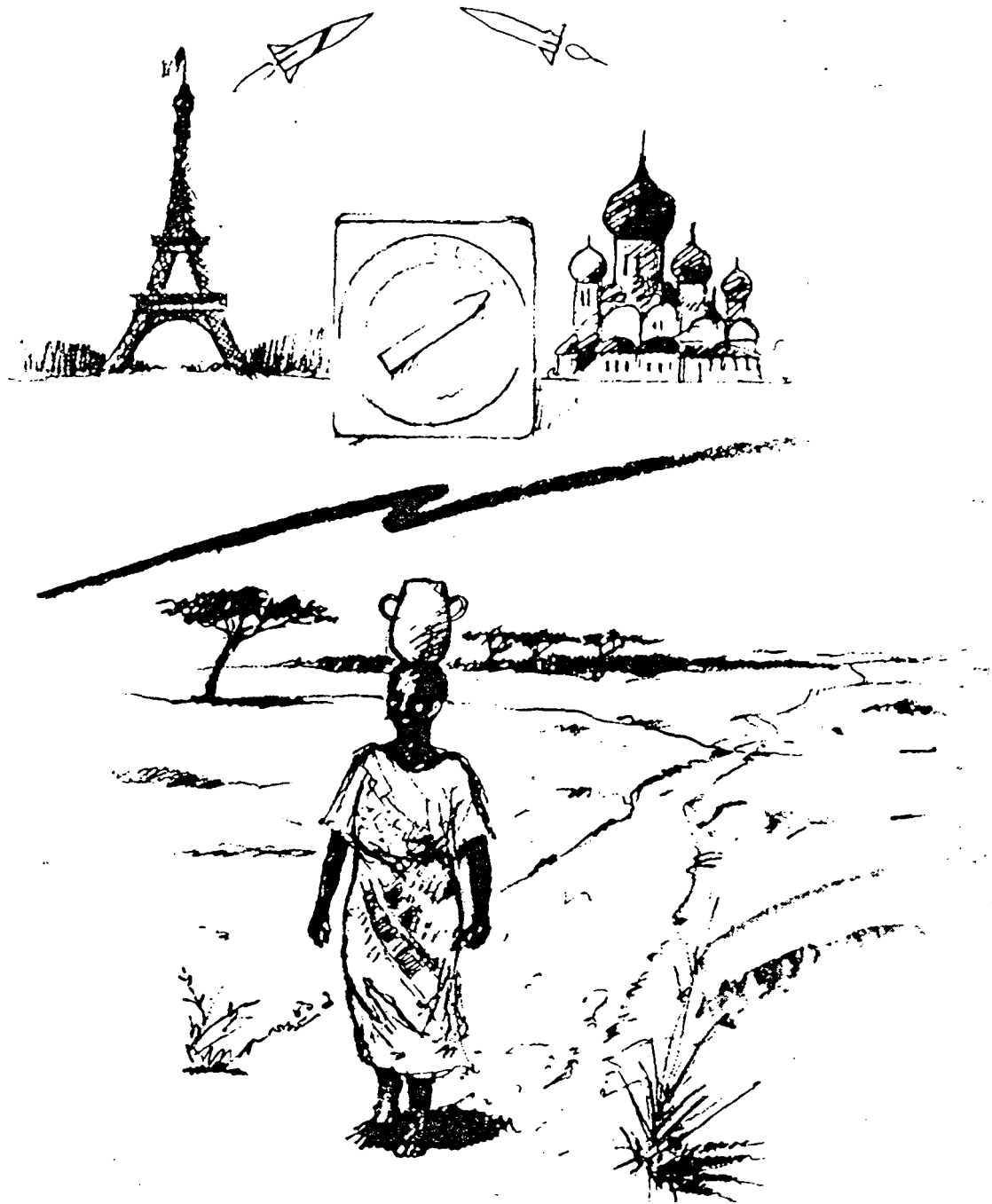
*An arms race no country can afford crowds out social needs".*

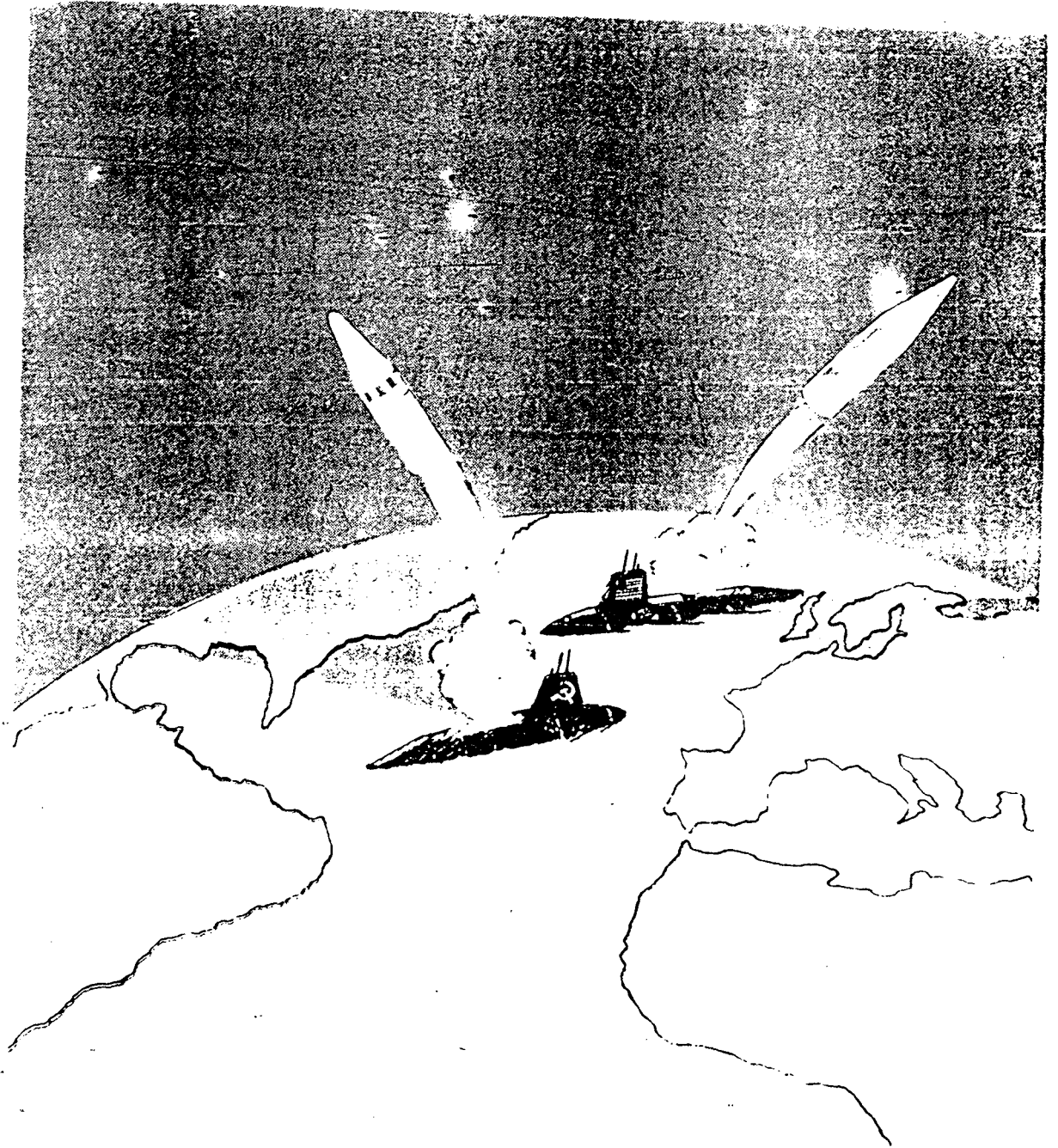
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These are Ruth Leger Sivard's own words introducing the readers of her latest annual report on world priorities--"World Military and Social Expenditures". Ruth Leger Sivard, director of the American research organization World Priorities, has for some years published this annual report that shows how the world's resources are spent on military purposes compared with resources spent on social needs. The purpose is to give an objective basis for assessing relative priorities. Ruth Leger Sivard's statistical facts and figures are frequently used around the world and are an invaluable source of information for all of those who are working on the change of world priorities.

## ABSURD PRIORITIES

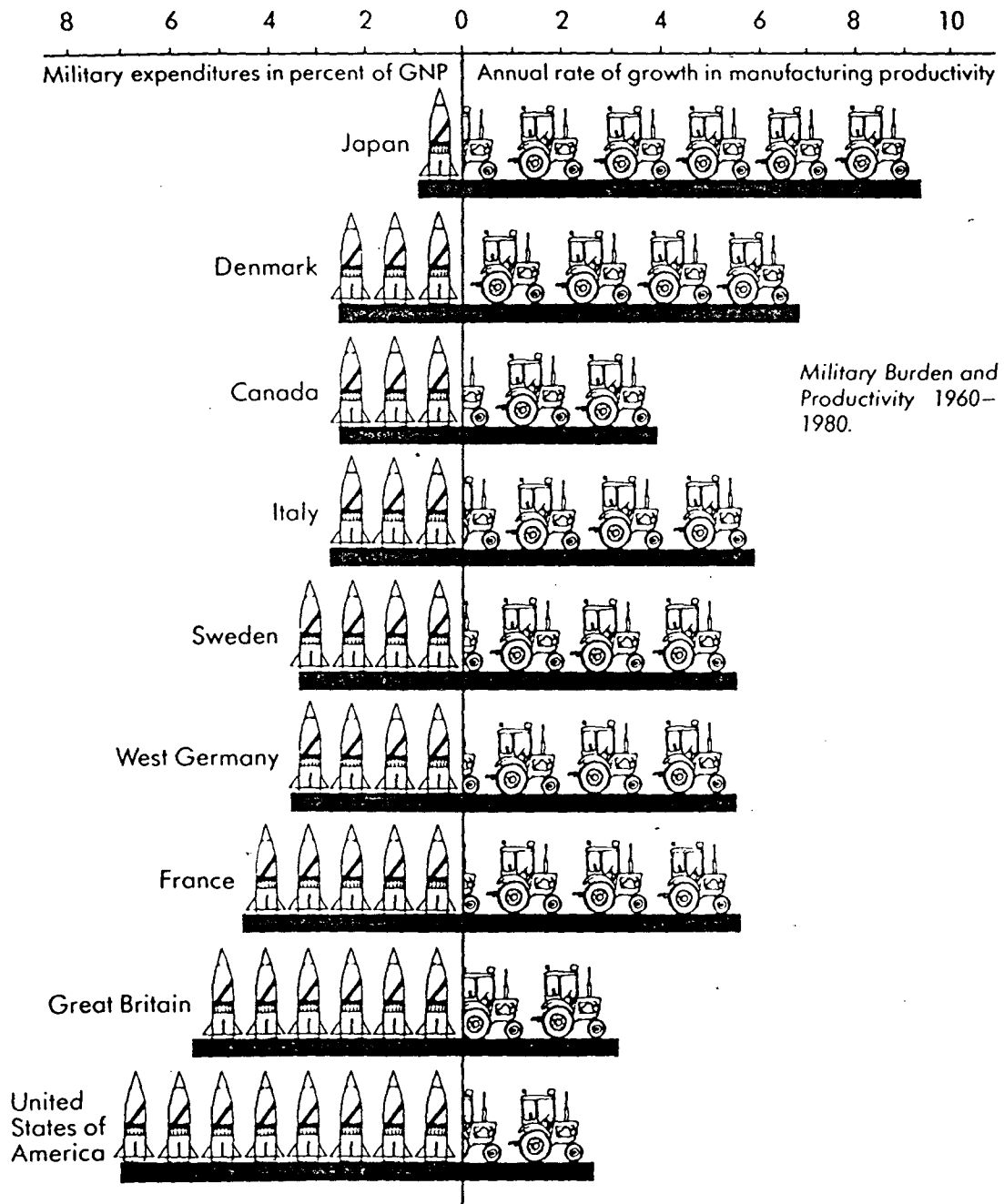
A nuclear missile can go from Western Europe to Moscow in six minutes, but the average rural housewife in Africa must still walk several hours a day for the family's water supply.





Civilian productivity lags but military productivity is up smartly. The World War II submarine could sink only passing ships; now a single sub can destroy 160 cities as far as 4,000 miles.

# MILITARY BURDEN AND PRODUCTIVITY

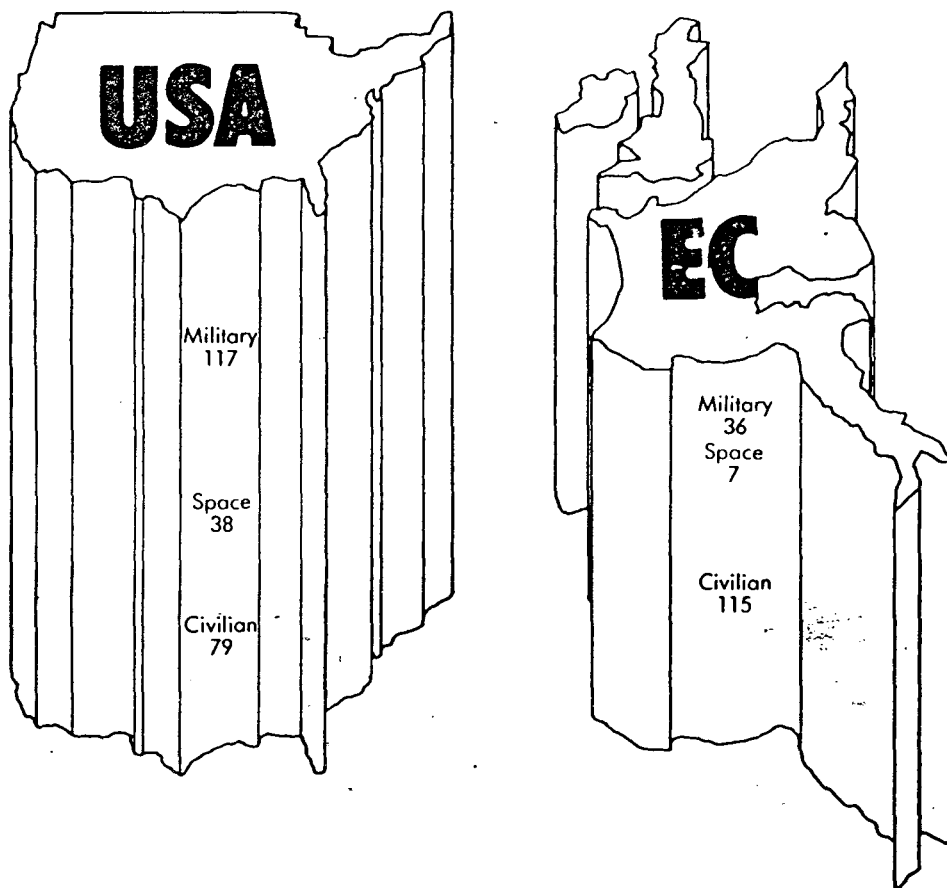


*Military Burden and Productivity 1960-1980.*

Countries with the highest military burdens have a lower annual rate of growth in manufacturing productivity.

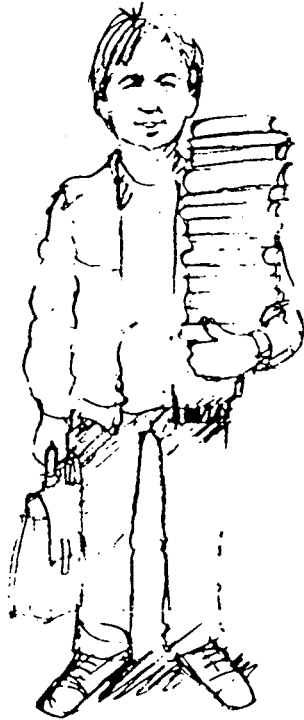
# MILITARY RESEARCH VERSUS CIVILIAN RESEARCH

Government Spending for Research and Development, 1970-1980 (billion U.S. Dollars).

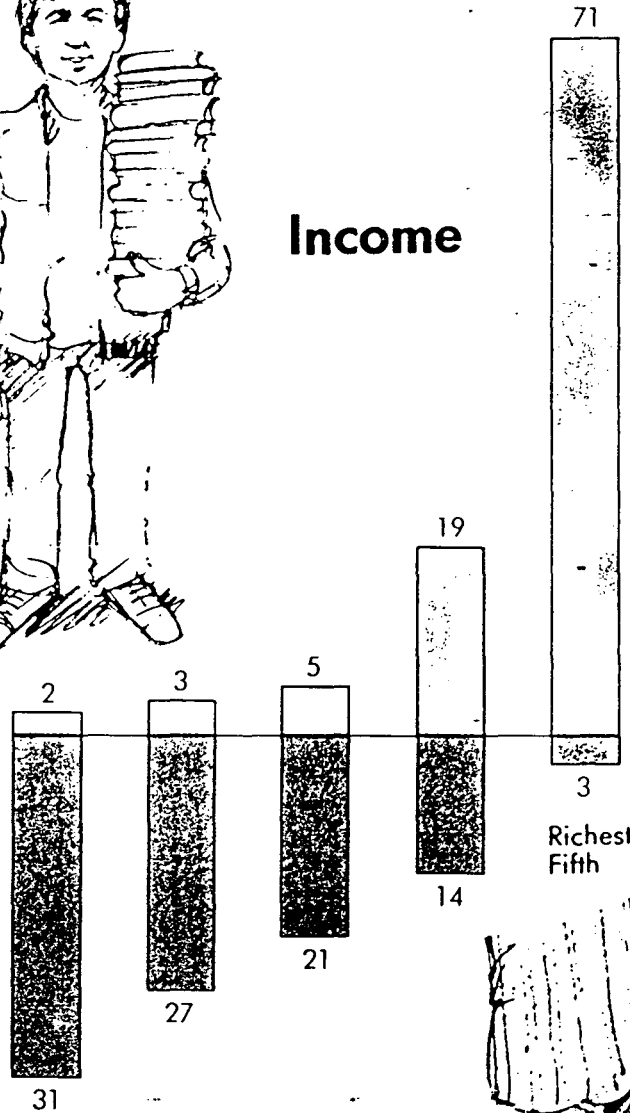


The US invest twice as much on military and space research than on civilian research. In the European Communities (EC) the situation is reverse. Two thirds of the government-financed research and development budget is spent on civilian and one third on military research.

# POVERTY AND ILLITERACY



**Income**



*Income and illiteracy by Fifths of the World Population (percent of world totals).*

**Poorest Fifth**

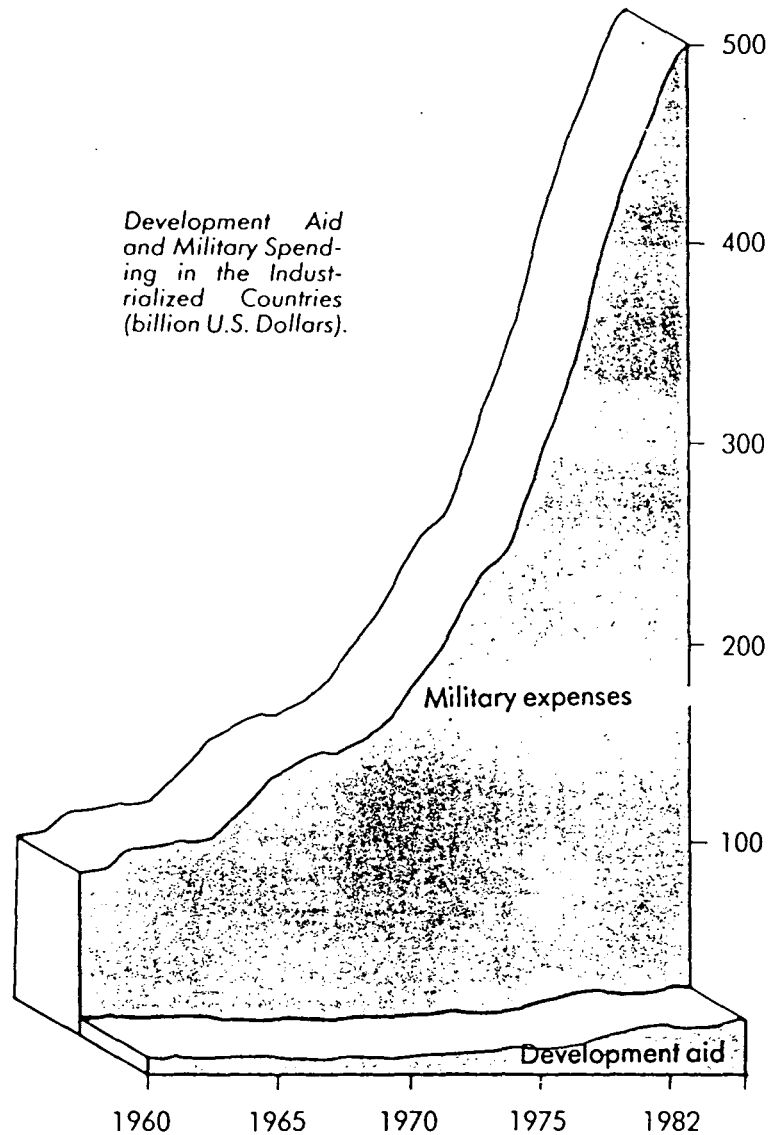
**Illiteracy**



Illiteracy is ten times higher among the poorest fifth of the world population than among the richest fifth.

## MILITARY EXPENDITURES VERSUS DEVELOPMENT AID

Rich countries continue to spend far more of their resources on military power than on development aid to their poor neighbours.



Between 1960 and 1982 military expenditures of developed countries rose by more than \$400 billion, their foreign economic aid by \$25 billion. In 1982 their military expenditures were 17 times larger than their extensions of aid to countries in need.

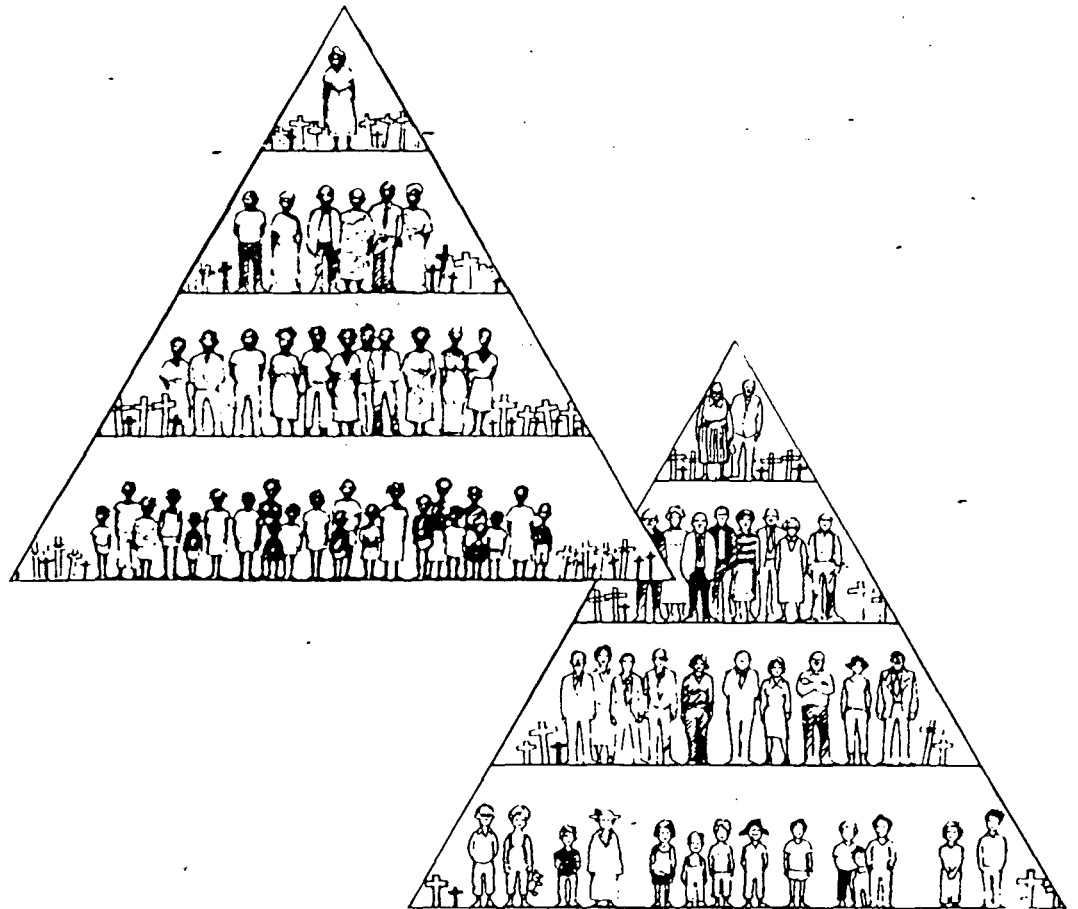




The cost of a single new nuclear submarine equals the annual education budget of 23 developing countries with 160 million schoolage children.

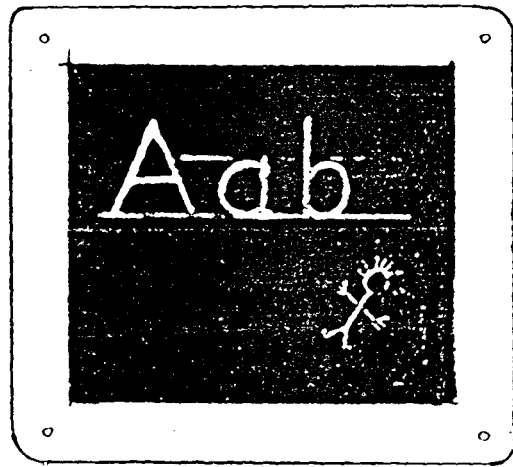
## POVERTY AND AVERAGE LIFE EXPECTANCY

The richest fifth of the world population lives 22 years longer on average than the poorest fifth. This is largely due to the high infant mortality.



## SOCIAL NEGLECT

To express in global numbers the range of unmet human needs in this world is the ultimate in statistical frustration, says Ruth Leger Sivard. Yet the crushing poverty and the overwhelming numbers of people must somehow be seen in terms that define the overall dimensions of social neglect. Behind every number is a human being with a relatively limited time on this earth. How he lives it is as important as how soon he leaves it. Too many live out lives in utter misery and despair.



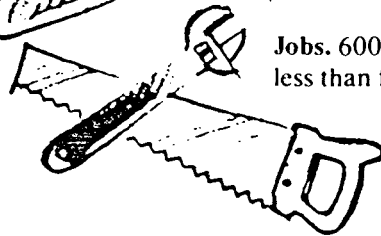
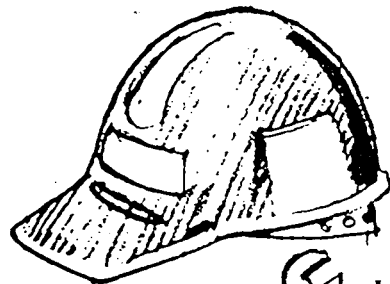
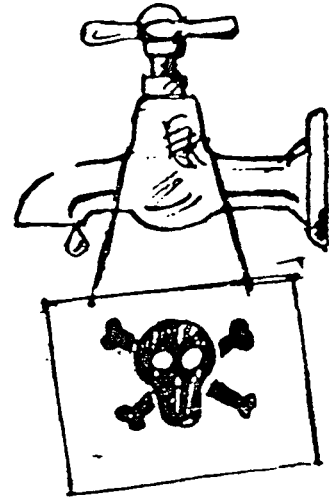
**Education.** 120,000,000 young children of school age have no school to go to.



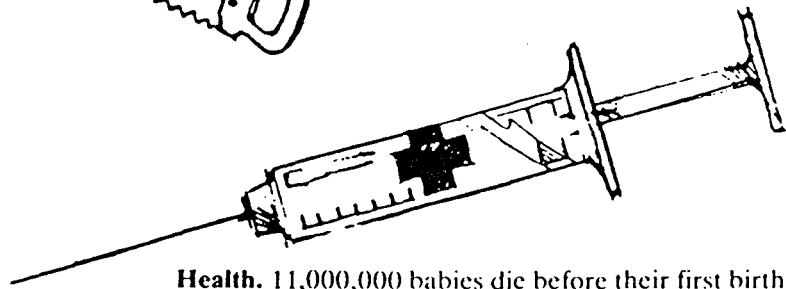
**Food.** 450,000,000 suffer from hunger and malnutrition.



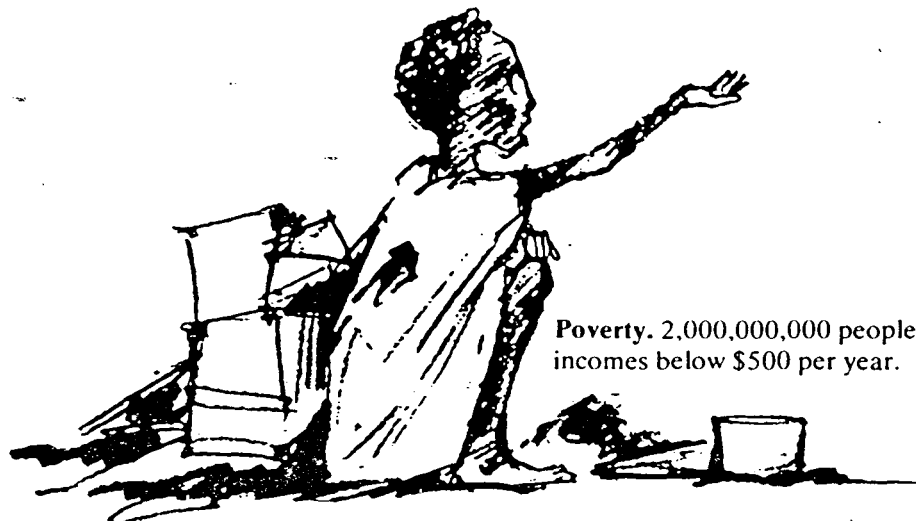
**Sanitation.** 2,000,000,000 people do not have a dependable supply of safe water to drink.



**Jobs.** 600,000,000 have no jobs or are less than fully employed.



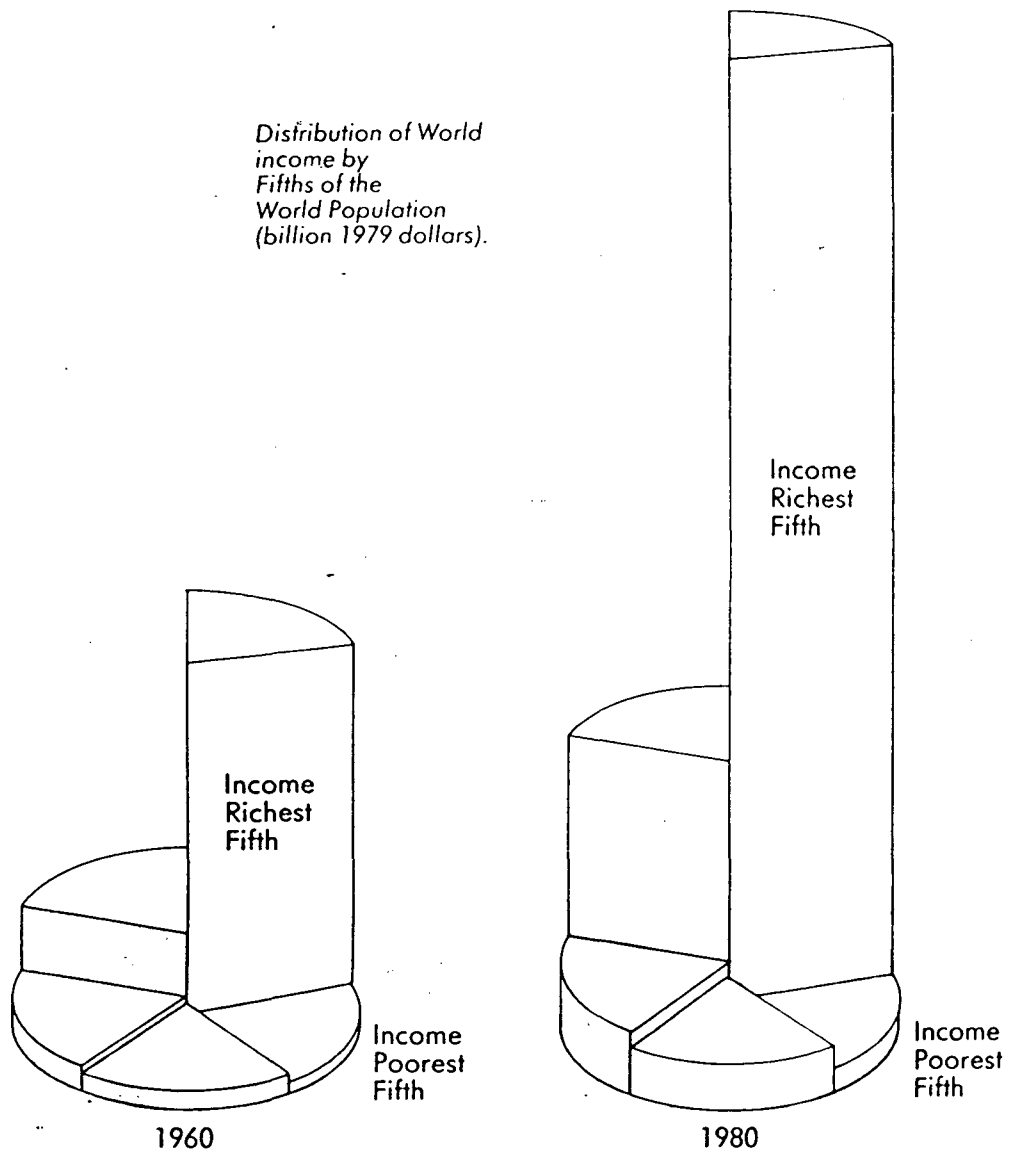
**Health.** 11,000,000 babies die before their first birthday.



**Poverty.** 2,000,000,000 people live on incomes below \$500 per year.

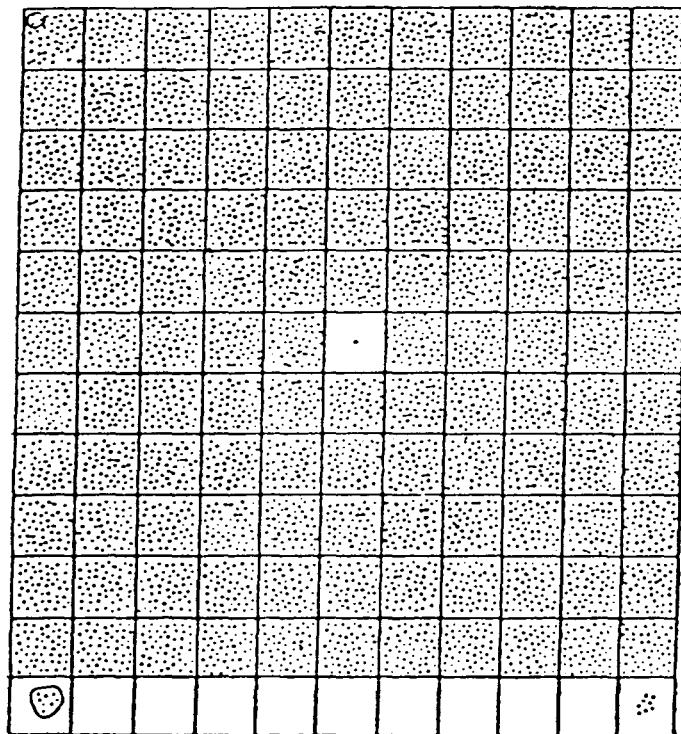
## THE INCOME-GAP BETWEEN RICH AND POOR COUNTRIES IS WIDENING

*Distribution of World income by Fifths of the World Population (billion 1979 dollars).*



The growth of GNP between 1960 and 1980 was benefited mostly by the rich countries. Calculated in constant prices the annual per capita income of the poorest fifth of the population advanced about \$54; for the richest fifth, the gain averaged \$4,224. The gap between the top and the low income levels more than doubled in absolute terms over the period.

The dot in the middle represents the firepower used during the Second World War. The remainder represents the firepower available today.



This picture compares the total firepower available today with that used during the Second World War. The dot in the middle represents the total firepower used during WWII -- 3 megatons. The remainder of the dots represents the firepower in existing nuclear-weapon arsenals and is equivalent to 18,000 megatons. This is 6,000 times more than the total firepower used during WWII. The United States and Soviet Union are each responsible for approximately half of this destructive capacity.

The circle in the upper left-hand corner represents 9 megatons which is equivalent to the firepower possessed by one Poseidon submarine. One Poseidon alone can destroy more than 200 of the Soviet Union's largest cities. There are 31 Poseidon

submarines and ten Polaris submarines with a similar capability in existence today.

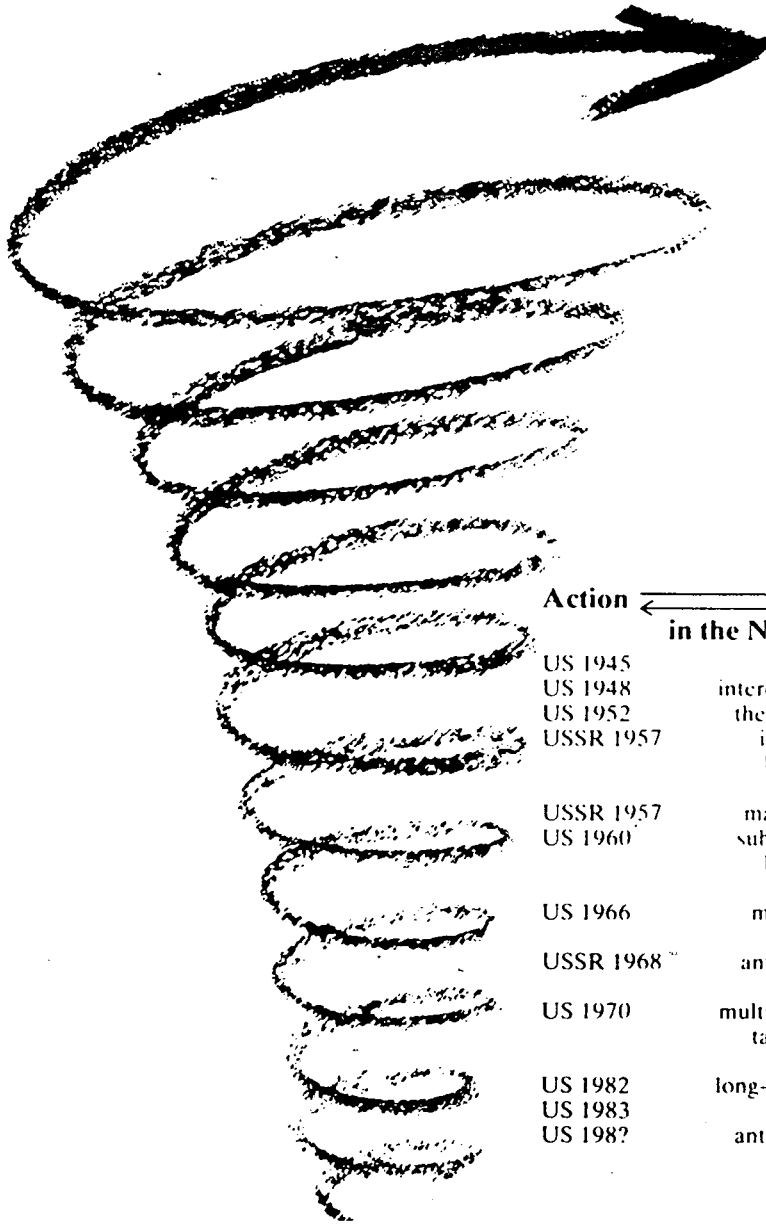
The circle in the lower left-hand corner represents a new Trident submarine and has a firepower which is eight times greater than the total firepower used in the Second World War. One such submarine can, on its own, destroy all the large cities in the northern hemisphere.

The Soviet Union possesses an equivalent destructive capacity.

Two of the smaller squares represent 300 megatons, which is sufficient firepower to destroy all the large and medium-sized cities in the world.

Source: *Stockholms-Tidningen*, 24 December 1983.

# BUT THE NUCLEAR COMPETITION IS JUST CONTINUING...



Action ←————→ Reaction  
in the Nuclear Competition

US 1945	atomic bomb	1949 USSR
US 1948	intercontinental bomber	1955 USSR
US 1952	thermonuclear bomb	1953 USSR
USSR 1957	intercontinental ballistic missile (ICBM)	1958 US
USSR 1957	man-made satellite	1958 US
US 1960	submarine-launched ballistic missile (SLBM)	1968 USSR
US 1966	multiple warhead (MRV)	1968 USSR
USSR 1968	anti-ballistic missile (ABM)	1972 US
US 1970	multiple independently-targeted warhead (MIRV)	1975 USSR
US 1982	long-range cruise missile	198? USSR
US 1983	neutron bomb	198? USSR
US 198?	anti-satellite weapon	198? USSR



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