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P U G W A S H N E W S L E T T E R

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C O N T E N T S

A NOTE FROM THE DIRECTOR-GENERAL

The contents of this issue of the Newsletter speaks for the rapid pace of Pugwash activities. We have a heavy programme before us, including preparations for the 27th Pugwash Conference in Munich which will be the largest so far both in numbers of participants and subjects for discussion. The importance of the forthcoming quinquennial Conference, where crucial decisions concerning future Pugwash activities and organization will be made, needs no emphasis. It has been recognized by the convening of an inter-Conference meeting of the full Pugwash Council in Geneva on April 16 and 17.

In this issue of the Newsletter we call the attention of national and regional groups to several matters, e.g., material for a TV film we are trying to achieve in collaboration with groups in the UK, USA and USSR (see p. 79); reporting to the central office on meetings of national or regional Pugwash groups (p. 78); suggestions for participants in various Workshops and Symposia (p. 78); and the need for finances to ensure adequate participation of colleagues from developing countries who would otherwise be unable to attend the quinquennial Conference and other international Pugwash meetings. The raising of such funds is, of course, apart from the need for prompt remittance of annual dues of national and regional groups to support the expenses of the secretariat. The increases in postal rate and printing and travel costs must be met if we are to function efficiently.

We need and solicit your help in all these matters.

M. M. K.

PUGWASH NEWS

Meeting of the Executive Committee of the Pugwash Council, London, 11-12 December 1976

(present: Bauer, Chayes, Feld, Galal, Hodgkin, Kaplan, Markov, Nalecz, Parthasarathi, Rotblat)

A 2 day meeting of the Executive Committee, with all members attending, took place at the headquarters of the Ciba Foundation in London. Proposals were discussed for three Workshops and three Symposia, suggested to be held during 1977, in addition to the Quinquennial Conference in Munich at the end of August, as well as three additional possible Symposia during the first half of 1978 -- a large and varied menu. Details will be presented in the Newsletter as they materialize. The programme of the Munich Conference was approved, conveners of the Working Groups proposed, and outlines agreed upon for the drafting of documents on the future organization and programme of Pugwash. An invitation was received and gratefully accepted for holding the 28th Pugwash Conference in Bulgaria in the summer of 1978. Plans were discussed for increasing the grants and contributions to the Pugwash Central Office operation by the approximately 40 per cent required to cover the increase in our activities and their costs over the last few years. The programme of Pugwash Monographs and other publications was reviewed, and plans made to issue a supplement of Professor Rotblat's Pugwash History, to cover the last five years, as a supplementary issue of the Pugwash Newsletter, in time for the Munich Conference. It was agreed that the Pugwash Council will meet in Geneva on 16-17 April 1977.

B. T. F.

CALENDAR OF FORTHCOMING PUGWASH MEETINGS

(please note modifications from former announcements)

March 1977 (Postponed to November 1977)

The Bangladesh Pugwash Group will hold a national Symposium on "Appropriate Technology for Rural Development in Bangladesh"

(Editor's note: Similar notices of national meetings will be published in the Newsletter as received).

Note:
Normally, a list of suggested participants for Pugwash international meetings are submitted, along with the proposal, by the Pugwash group of the host country or region to the Pugwash Council or Executive Committee for consideration. In order to assist the Council and Committee to achieve the desired balance of experts for particular topics, especially from Africa, Asia and Latin America, Pugwash national and regional groups are invited to send suggestions concerning participants for the various Symposia and Workshops below.

Pugwash groups sponsoring a particular meeting are urged to budget for or provide other means (e.g. air tickets by national airlines) for transport of participants from developing countries who otherwise could not attend.

14-15 April, 1977 — Geneva, Switzerland

Workshop on Draft Treaty on a World-Wide Nuclear Weapon-Free Zone
(based on proposal by Working Group 2 at Mühlhausen)

16-17 April, 1977 — Geneva, Switzerland

45th Session of the Pugwash Council

June, 1977 — India

Workshop on Code of Conduct/Guidelines for International Scientific Cooperation for Development

17-19 August, 1977 — Leverkusen/Köln, FRG

Fifth Workshop on Chemical Warfare
Topic: Norms of possible verification procedures relating to a ban on lethal chemical weapons.

22-23 August, 1977 — Munich, FRG

46th Session of the Pugwash Council

24-29 August, 1977 — Munich, FRG

27th Pugwash Conference

(For agenda see Newsletter, July and October 1976, p. 44)

6-9 October, 1977 Toronto, Canada

Symposium on Avoiding a Nuclear War by the Year 2000

Tentative Agenda

1. Consequences of nuclear war.
2. The avoidance of nuclear war up to the present time.
3. Future nuclear developments, as they affect the threat of war.
4. Scenarios for nuclear war.
5. Lessening the threat of nuclear war.

October, 1977 USA

Symposium on Technological Choice and Social Values (tentative title)

(For agenda see Newsletter, July and October 1976, p. 43)

November or December, 1977 Oslo, Norway

Symposium on Militarism and National Security

January, 1978 Ghana

Pan-African Symposium on Feeding Africa

(For agenda see Newsletter, July and October 1976, p. 44)

April, 1978 Poland

Symposium on European Cooperation and Security

August, 1978 Bulgaria

28th Pugwash Conference

TV FILM ON PUGWASH

Efforts are being made for the preparation of a 45-60 minute TV film commemorating the 20th anniversary of the Pugwash Movement for a world-wide distribution by various networks. TV services in the USA, USSR and UK are exploring the possibilities of a collaborative effort to accomplish this goal without cost to Pugwash. Would individual or national groups possessing film clips or interesting photos of prominent Pugwashites or meetings kindly inform the Director-General concerning their nature and availability for possible inclusion in the film mentioned above.

RECENT PUBLICATIONS

1. "Nuclear Reactors : To Breed or Not to Breed", edited by Prof. J. Rotblat, (Taylor and Francis Ltd), London 1977. 124 pages. £1.

This attractive paperback, published in record time, concerns a debate sponsored by the UK Pugwash Group at the Royal Society on 28 September 1976. Original papers by experts covered the following topics: nuclear power and the environment; fast breeder reactors in relation to energy requirements; the safety of a commercial fast breeder; processing and reprocessing of fuel; radioactive waste; management in the United Kingdom; diversion of plutonium and proliferation of nuclear weapons; the report of the Royal Commission on environmental pollution (analysis by Sir Brian Flowers). The discussions are summarized. The book is an indispensable addition to the library of all Pugwashites. Copies can be ordered directly from the publisher, or from the Central Office in London at £1 per copy, plus postage.

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2. "Armaments and Disarmament in the Nuclear Age"
Published by SIPRI (1976) in collaboration with Almqvist and Wiksell International, P.O. Box 62, S-101 20 Stockholm 1, Sweden
and
Humanities Press Inc., 171 First Avenue, Atlantic Highlands, N.J. 07716, USA. 308 pages. Price Sw.Kr. 82.-.

The new SIPRI book was specially prepared to mark the 10th anniversary of the Stockholm International Peace Research Institute. Drawing on a selection of studies by the SIPRI staff and visiting scholars, the book conveys the sum of SIPRI's findings, the most essential data, analyses and conclusions. It is thus a unique and extensive compendium of expert knowledge on world armaments and its far-reaching implications.

"Armaments and Disarmament in the Nuclear Age" covers in its eight chapters the following subjects: the state of world armaments; the nuclear momentum; chemical and bacteriological warfare; environmental warfare and weapons of mass destruction; conventional weapons and arms trade; armament dynamics and military research and development; the economic and social consequences of armaments; and arms control and disarmament.

The Proceedings of the Wingspread Symposium on "International Arrangements for Nuclear Fuel Cycle Facilities" are expected to appear in February 1977, published by Ballinger Press.

PUGWASH WORKSHOP ON FEASIBILITY AND IMPLICATIONS FOR A SYSTEMS APPROACH STUDY TO GENERAL AND COMPLETE DISARMAMENT (GCD)

Sukhumi, Georgia, USSR, 25-29 September 1976

Participants

R. Björnerstedt (UN)
S. Baranovsky (USSR)
F. Calogero (Italy)
V. V. Chavchanidze (USSR)
J. Freymond (Switzerland)
V. Gelovani (USSR)
M. M. Kaplan (Director-General)
H. Krauch (FRG)
M. Mahfouz (Egypt)
M. A. Markov (USSR)
M. Nalecz (Poland)
E. Nappelbaum (USSR)
K. Oshima (OECD)
E. Pestel (FRG)
J. P. Perry Robinson (UK)
G. W. Rathjens (USA)
M. Shubik (USA)
M. P. Schutzenberger (France)
S. S. Shatalin (USSR)
A. Tavkhelidze (USSR)

Agenda

1. Scope, major parameters and interrelationships to be considered, for example:
   a. Successive stages of arms control and disarmament (nuclear, conventional and other weapons) leading to GCD.
   b. Economic consequences - national and global.
   c. Considerations related to the various political and social ideologies.
   d. Role of the UN and other international organizations.
2. Methodological considerations.
3. Brief consideration of resource and other requirements, e.g. personnel, hardware, location, collaboration with different groups, time-phasing, costs.
4. Conclusions from general assessment made by the Working Group.

Report on the Workshop

Introduction

The Workshop met in Moscow and Sukhumi, 25-29 September 1976. Our hosts were the USSR Academy of Sciences and the Georgia Academy of Sciences to whom we express our appreciation for their kind hospitality.

This Workshop arose from a recommendation made at the 25th Pugwash Symposium held in Kyoto in August 1975. The recommendation, approved for implementation by the Pugwash Council, was based on the realization that Pugwash and other efforts for arms control and disarmament, and the final goal of general and complete disarmament (GCD), were often considered in isolation without taking sufficiently into account their inter-relationships and effects on one another. An exploration of the potential contribution of systems analysis towards these ends was recommended.

The Workshop reviewed briefly two complementary approaches which could be taken.

The first would be to attempt to conceptualize and describe a world in which GCD could be viable.

It is generally acknowledged that GCD involves a series of highly complex problems, including those of disarmament, and that the only way to approach it may be firstly the study of a new world order. The group felt that at the present stage priority should not be given to a systems approach to GCD itself, but rather to problems that are connected with the process of comprehensive disarmament within the present world order. Such comprehensive measures are in fact and in principle related to the initial and intermediate stages of any approach to GCD.

However, the whole concept of GCD is of such socio-economic and political importance in relation to future prospects of world peace, development and the new world order, that a comprehensive description of the different goals and the various factors involved may be of considerable value.

The second approach would be to formulate a systematic and dynamic approach towards comprehensive disarmament by progressive and mutually reinforcing steps for arms control and disarmament, using the tool of systems analysis, a discipline which is being increasingly employed to deal with complex problems in an integrated way, quantitatively and qualitatively.

The basis for discussion by the group was a background document prepared on the request of Pugwash by the Science Policy Research Unit of the University of Sussex, UK. We wish to express our great appreciation for this most useful service.

A. GCD and the UN

For the past five years in the UN, interest in GCD has been channelled into procedural proposals. In 1971 the proposal for a World Disarmament Conference was revived. Despite widespread support for this idea, progress has become blocked. Another proposal has now been tabled for the holding of a Special Session of the General Assembly to consider:

a. a review of the problem of disarmament;
b. the promotion and elaboration of a programme, or priorities and recommendations in the field of disarmament;
c. the question of convening a World Disarmament Conference.

If the General Assembly acts on this proposal, it is probable that a Special Session will be held in 1978. This would be a substantial operation and there is little doubt that the question of GCD would be on the agenda as

an important item. The search for new and more realistic approaches to GCD is therefore a very timely effort.

B. Roles for Systems Analysis in Disarmament

Systems-analytic techniques can facilitate the task of answering questions about the behaviour of complex systems. The interactions among the factors which act to constrain or facilitate disarmament - psychological, social, economic, political, strategic, or whatever they may be - can in principle be portrayed in models amenable to systems analysis. The capacity of modern systems-analytic techniques for digesting numerous and disparate inputs suggests that their application might well increase understanding of the nature of the interactions, and therefore assist progress at a policy-making level towards disarmament.

For such an outcome, however, there is a basic prerequisite that may prove impossible to fulfil without complementary use of other modes of investigation. The questions about disarmament to which answers are sought from systems analysis must be so clearly defined that the models may be constructed with neither an insufficiency nor a superfluity of detail. Big questions require big models, and for these the methodological and data-base requirements may prove unsatisfiable. In such a case the role of systems analysis would be limited to subordinate questions or, at most, to a systematic registration of intuitive judgments.

There is, in addition, the utilitarian requirement that, whatever the questions posed for systems analysis, the modelling should accommodate different perceptions of causality. It has to be recognized that, whilst consensus may possibly be reached on the range of parameters that relate to the particular disarmament question under study, there may well be widely different beliefs on the relative importance of individual parameters. Herein may in fact lie the main contribution which systems analysis can make to disarmament, for its techniques can be used to identify, isolate and assess such differences: dialogue can then concentrate on those issues, thereby exposed systematically and located within a broader perspective, where views differ.

In summary, therefore, it is clear that for systems analysis to make a positive contribution towards disarmament, a great deal of prior thought and prior consultation among different groups of specialists must be addressed to the structure of whatever models are to be used.

With regard to more specific roles for systems analysis in disarmament, the group noted three possibilities:

(1) Models as a means of communication among professionals, decision-makers and the public.

(2) Men-machine games and simulations as an operational and study device for the planning and decision-making staff and bureaucracy to be used jointly with scholars and scientists.

(3) Systems studies for specific analytical purposes.

(1) As has been demonstrated by both the success and failure of the Commission for the Year 2000, The Club of Rome, the Hudson Institute and others, simple models provide an important means of communication to decision-makers and the public as a whole. We therefore suggest the promotion of several systems models to sketch several alternative scenarios and aspects of the armament and the disarmament processes and to pinpoint the differences between them.

The models should be constructed and checked by scientists and scholars from many disciplines, on an international and transcultural basis, with emphasis laid upon avoiding the errors committed by the previous studies in overstressing the operational possibilities of simple models which were of

value primarily for illustration and communication.

(2) Men-machine games and simulation combine models with individuals thereby providing a degree of political reality. They are forceful learning vehicles for both the model-makers and the planners and decision-makers, if they are carried out in joint operation. Careful preparation and structuring of both problem analysis and games provide the basis for models, which in turn increase the density and complexity of learning and understanding of the participators. These should involve high military and political authorities, preferably generals and ministers, scientists, and the public, if feedback and graphic display is included in the work.

(3) Systems study can be applied for the analysis of various specific issues of GCD or even to the whole concept of GCD. However, it has to be clearly noted that in practice study has to be based on some specific approach, for example socio-economic interaction, techno-economic systems etc., to fulfil the purpose of analysing the issue of concern or scenario proposed. Therefore, in the systems studies, different specific studies should be performed on the one hand, and overall interlinking of such individual studies in a multi-disciplinary manner should follow on the other. In most cases such studies would be rather expensive to be meaningful because of the need of constantly updating data-bases, and may pose difficulties for cooperation because of the involvement of classified information.

C. Suggested Collaborative Projects Involving Researchers from the East, West and South (Developing Countries)

The group reviewed various possibilities for trial projects using systems approaches to problems of comprehensive disarmament which would satisfy two basic criteria. These are:

1. There would be good prospects of participation of individuals and institutions from the East, West and South for a truly collaborative effort which would be necessary to achieve significant results.
2. The projects would be feasible technically and financially for testing and application of systems analysis techniques over the next two years, at which time a re-assessment could be made concerning the continuation and expansion of such efforts.

The group suggested that should interest in participation be expressed by various groups in the different political groups of countries, Pugwash should take the initiative of convening working groups on respective projects to analyse more deeply the technical and administrative aspects of the collaborative efforts.

As further background in considering the possible implementation of projects, the following thoughts were expressed:

a. A collaborative effort would need some sort of semi-official approval; it could not very well be undertaken by private researchers (this does not apply to all the parties concerned, but does apply to some).

b. It is considered unlikely at this stage that such official, or semi-official, backing could be obtained for any collaborative project involving a realistic data base, and/or people close to the decision-making or intergovernmental negotiating process, where such data are highly sensitive.

c. It may therefore be premature at this time to plan certain collaborative projects directly relevant to the real world; an abortive attempt is probably worse than nothing, because it may jeopardize the possibility to undertake such a project in the future, i.e. when circumstances will permit.

d. The question then is whether one can devise collaborative projects that would be highly theoretical, i.e. perhaps a study in the abstract, in terms of idealized models - but using systems analysis technique such as man-machine simulation - of the disarmament process.

Specific Projects Suggested

1. A Systematic Investigation into the Social Functions of Armament

Progress towards disarmament may be facilitated by a fuller understanding of the obstacles. There is much correspondence between the reasons why states do not disarm and the reasons why they arm in the ways that they do. The reasons are not simple: for some if not all states, it is clear that considerations of security, which are themselves highly complex, offer only a partial explanation, and that the armament process has become so deeply embedded within economic, political and bureaucratic structures that it has assumed a multiplicity of social roles. The full significance of these roles can be appreciated only if the armament process is viewed as a whole: that its dynamics are seen to be a matter of supply as well as demand, of social structure as well as participating institutions. A systems approach could provide such an overview; and it might well be that systems analysis could be used to develop heuristic models of armament dynamics which expose negative feedback loops that might be enhanced or created by disarmament negotiation. The building of these models, which could be done at different levels of aggregation - national, regional, even global - and the associated data collection efforts could both profit from and feed into most of the other projects suggested below, especially numbers 2 and 4.

2. Could there be a Minimum Level of Stability for Military Balances?

To the extent that "security" resides in mutual deterrence dependent upon a military balance among adversative States - an assumption that requires validation - it may be possible to conceive of a minimum level of armament below which the military balance becomes unstable, ceasing to confer security, and above which further armament adds less and less to security. Since the latter situation would represent an extravagant consumption of resources that might more appropriately be devoted to the economic development of the Third World, it is important to determine whether such a minimum level can indeed be specified. The application of systems analysis, especially computer modelling, would be particularly appropriate for this problem since it is evident that at least three components would have to be considered simultaneously - 'East', 'West', and 'South'. Further, military balances would have to be evaluated in terms of their dynamic stability, e.g. the manner in which they respond to changes over time in technology, in alliance groupings and their industrial potentials, in resource availability (energy, minerals, agriculture, etc.), in demography, and so forth. Political and social factors could be captured via the scenario technique. If such an investigation were to demonstrate that the concept of a minimum stable military balance is tenable, the modelling could be used to explore ways and means for decreasing not only present levels of armament, but also the minimum stable level itself, in order to free resources for development.

3. Accidental Nuclear War

Command and control operations within the nuclear states have in-built checks and safety controls to ensure that unauthorized individuals or groups, or misinterpretations (e.g. unidentified objects on radar), will not lead to an all out push-button nuclear war. Clearly, such in-built devices are not completely fool-proof and it is to the interests of all states to exchange technical information on such procedures to improve both national and international communication capabilities

in this connection. The work involved requires highly expert systems analysis techniques.

4. Impact of Conflict between Small Powers on Big Power Relations

One of the grave dangers of the present period is that a nuclear war will be unleashed between the big powers inadvertently because of the rapid escalation of events occurring outside the direct control and intentions of the responsible political and military authorities of the major powers concerned. Conflicts or confrontations between the great powers have in fact been provoked by third parties, by conflicts opposing small or middle size states or factions within a country. Moreover, there is a general trend toward the use of violence and weapons of increasing destructiveness to wage these small wars, some of them having the characteristic of international civil wars.

It would be of interest, therefore, to study some of these cases of small wars or internal-international conflicts to understand the mechanism through which big powers are involved, and examining such questions as the impact of an interruption of arms delivery to opposing factions. Such a study would need to involve, as a prerequisite, collaboration between institutions of the East, West and the Third World in order to obtain any fruitful insights on this particular problem.

5. The Study of Hijacking as another Test for Systems Analysis

There are a series of problems of modest scope which, while not directly involved with disarmament, are of direct and immediate importance: they are not costly to investigate, and they provide a direct test of the usefulness of systems analysis and the feasibility of international cooperation. A specific example of such a problem is aircraft hijacking. It is suggested that it be considered as a pilot project for collaborative work among several national institutes.

Apart from the problem itself and the usefulness of its solution, work on it serves as a prototype for the study of a whole class of problems having to do with violence in the international system (e.g. blackmail by terrorist or other groups) which in the future may well become increasingly important should mass-destruction weapons - such as bombs from stolen plutonium, toxic nerve gases, etc. - become available to such groups.

6. Negotiating Techniques

The present format of disarmament negotiations - for instance, SALT - is unsatisfactory in many ways. While this may be ascribed to insufficient political will, one should also investigate whether a change of format, and aim, in the negotiations could be more conducive to significant progress in disarmament.

There is therefore need for imaginative suggestions for novel approaches to negotiations in general, and for studies to test these suggestions. Systems analysis (especially simulation) are the most appropriate techniques for doing this. Investigations involving joint collaboration of researchers from the different political groupings would be most useful in this connection. But even if it were impossible at an early stage to achieve this, such work would still be worthwhile if it produced and tested novel ideas, which might eventually be taken up at the official level. In any case the project should promote a better understanding of the negotiating process, including its drawbacks, e.g. the "bargaining chip" syndrome and its peculiar difficulties, and the fact that negotiations involve more intragovernmental that intergovernmental bargaining. Behavioural studies of the concept of security and institutional decision-making could be useful in this connection.

Conclusions

Systems analysis could be a useful tool in approaching problems of comprehensive

disarmament, and ultimately GCD. Several specific suggestions are made for collaborative efforts involving East, West and South to test the value of systems analysis on selected problems on disarmament. In keeping with the aims of Pugwash these efforts should be truly collaborative in nature, i.e. involving institutions and individuals from the East, West, and Developing countries.

If interest is expressed by qualified authorities in these countries on a particular proposal, Pugwash should arrange a meeting of the parties concerned to consider in detail the design and dimensions of the effort to be undertaken, organization, finances, etc. Pugwash could thus serve most usefully as a coordinator of the early efforts which may be undertaken. The continuation and expansion of such efforts after one or two years would depend on the results achieved, and future interest by qualified groups.

Abstract of background document prepared for the Workshop:

"A Systems-Analytic Approach to the Study of General and Complete Disarmament"*

by R. Curnow, M. Kaldor, M. McLean, J. Robinson, and P. Shepherd (Science Policy Research Unit, University of Sussex, UK, Prof. Christopher Freeman, Dir.)

The authors propose a two-phased approach to the study of general and complete disarmament: a synthesis of past research to portray the social roles of armament, and an attempt to understand the policy implications of a reversal of the armament process. The development of dynamic models, through the application of structural modelling and the expansion of the historic data base, would allow the assessment of alternative paths to general and complete disarmament. The authors are aware of the limitations of systems analysis, and stress the need to involve a wide audience in the evaluation of the results.

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* This paper has since been published in full in "Futures", October 1976.

Twenty-Seventh Pugwash Symposium

PROBLEMS OF MILITARILY-ORIENTED TECHNOLOGIES IN DEVELOPING COUNTRIES

Feldafing, FRG, 23-26 November 1976

Agenda

I. Factors influencing the acquisition of military technology by developing nations.

II. Factors influencing the supply of military technology by industrialized countries.

III. The consequences of such acquisition and supply on the development process.

IV. Strategies for transition towards civil technology transfer.

V. Role of the United Nations and its organs; relationship to the "new economic order".

VI. Responsibilities of scientists.

Participants

Adebisi Adebiyi (Nigeria)
U. Albrecht (FRG)
M. Innas Ali (Bangladesh)
D. Bald (FRG)
J-C. Behrmann (FRG)
E. Benoit (USA)
H. G. Brauch (FRG)
E. Ehrenberg (FRG)
A. Eide (Norway)
V. S. Emelyanov (USSR)
A. G. Frank (FRG)
J. F. Freymond (Switzerland)
M. Garcia (Chile)
K. L. F. Gottstein (FRG)
W. A. K. Jablonsky (FRG)
Mary H. Kaldor (UK)
M. M. Kaplan (Director-General)
I. Kende (Hungary)
M. Kidron (UK)
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P. Lock (FRG)
H-C. H. Loeck (FRG)
M. M. Mahfouz (Egypt)
M. Mushkat (Israel)
M. Nitsch (FRG)
J. Oberg (Sweden)
V. Rabinowitch (USA)
J. Rotblat (UK)
K. W. Rothschild (Austria)
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T. Spengler (FRG)
C. F. von Weizsäcker (FRG)
M. D. Wolpin (USA)
H. Wulf (FRG)

Report on the Symposium

Under the theme "Problems of Militarily-Oriented Technologies in Developing Countries" (LDCs) 35 natural and social scientists from 14 countries met in Feldafing (near Munich), November 23-26 1976, to discuss in a Pugwash Symposium the social and economic consequences of the increased transfer of military technologies to LDCs, particularly as they relate to the achievement and maintenance of world peace. While discussions concentrated on arms transfers to, and production of arms in the Third World,it was agreed that ultimately solutions to the problems resulting from these activities must be sought not only in changes in policies in the less developed countries but also in changes in the developed world.

A paper surveying global arms trade emphasized changes in the pattern of arms trade during the last few years, an important aspect of which has been an increase in the number of developing countries setting up arms production programmes through the mechanisms of licensing, transfer of complete production lines and copying. The capability to copy weapons systems was considered particularly significant because it enables countries to reduce technical dependence on the industrial countries, as experiences in China and Pakistan show. This growing capability has important implications for arms control programmes.

A number of views were expressed regarding motivations for initiating arms production in Third World countries including: the achievement of a higher degree of political independence; increasing national security; and satisfying economic interests of the exporting as well as importing countries.

Discussion of Third World interests and capabilities inevitably turned to attempts to define what is meant by development and indeed what countries are included in the category "less developed". There was no attempt to reach agreement on the definitional problem however. The participants did agree, as an aid in the discussions, to accept the broadest possible definition which would allow for the inclusion of Israel and South Africa in the category of less developed countries.

The question was raised whether the transfer of military technology created a new type of dependency. Experience has shown that even in those countries with long histories of technology importation a situation of dependency continues to exist. Participants generally agreed that at the very least, relationships of varying degrees of influence on both sides, exporting and importing, resulted from the transfer process.

The technological interrelationships between Third World countries and arms producers in industrialized countries is demonstrated by the case of Iran where the presence of some 20,000 specialists from the United States influences not only Iranian military actions, but its social and political actions as well. This same personnel could, however, be used by Iran as hostages should a conflict situation arise.

Discussion of the significance of military technology, its evolution and impact on social and economic development brought out the importance of seeing it as a social organization or system as opposed simply to a body of knowledge embodied in military hardware - in other words as an organization of people involved in the production and use of technology. If considered in this way, the implications of technology transfer might be better understood and thus more practical policy prescriptions be elaborated.

It was pointed out that the evolution of military technology has resulted in the

development of very complex weapons systems which involve hierarchical social groupings reflecting the industrial structure and military organization of the advanced countries. Making changes in any one aspect of the system is difficult, if not impossible, without changing the system as a whole. The implications of this situation for policy makers both in arms exporting and importing countries are substantial.

The impact of importation of weapons systems (particularly by industrially weak countries) on the strategy for overall industrial development was emphasized. Considerable concern was expressed by participants that such introduction of weapons technology could set in motion technological developments based on the industrial structure of advanced countries and not necessarily appropriate for development.

Much attention was given to the basis for arms exportation by industrial countries, for it was felt by many that changes in weapons transfer policies would need to be effected at the exporting end. In this regard the critical economic situation in developed countries was considered a vital element in the increase of weapons exportation to LDCs. The real challenge to the survival of some of the respective industries was thought to be a transformation of their purposes to serve critical social needs - a change that few participants thought easy or even possible!

Concern was expressed by many that the absence of consideration of nuclear weapons in the discussion of weapons systems, though clearly outside the frame of reference of the Symposium, was nonetheless an important omission, and could not be disregarded in any comprehensive analysis of overall weapons transfer problems.

Several participants expressed concern that weapons technology be seen not as an independent variable, but rather as intimately related to the social, economic and political aspects of national development.

Some discussion focussed on the "cost" of weapons technology to countries which could afford the technology but had not a compatible social structure to support it, thus bringing about a dependency situation. Several examples of countries experiencing such a situation were described (Iran, South Vietnam). In this regard, many thought that this situation was not unique to introduction of weapons technology but rather was a generalized problem relating to the introduction of any technology.

A paper on the Endogenous Military Technology Capabilities - using the Middle East arms race as an example - described the effect of weapons transfer on a region's economic development and search for peace. This paper stimulated a vigorous discussion of the causes and effects of arms races, particularly their effects in stimulating armed conflict and in inhibiting economic development, a subject which was to be considered in a number of papers presented to the Symposium.

A paper arguing exactly the opposite point of view - namely that the military defence programmes may, on balance, have somewhat benefited the growth of civilian economies, generated a considerable controversy. Admittedly a first step in a more comprehensive analysis, the study nonetheless suggested that less emphasis on maximizing traditional investments and more emphasis on improved training, motivation and productivity in the non-industrial sectors might contribute substantially to maximum development and to reduce defence burdens.

This view was challenged by pointing out that other causal relationships could be presented to explain this phenomena. For instance, high economic growth rates achieved in a developing country, especially exported growth under world market conditions, might antagonize large sectors of the population. Since inequalities are increased in such a situation, social frictions could

lead to an expansion of military expenditure to ensure, by means of repression, sustained industrial growth. Furthermore, it was pointed out that militarization in the Third World often correlates with crisis situations in the capitalist system.

Serious questions were raised, particularly with respect to the statistical treatment of the available data on military expenditures and GDP as a measure for development. However, if one could argue that there is a positive correlation between military spending and growth, most participants felt it is not a satisfactory measure since the effect on the welfare of people may either be negligible or even be negative for a large part of the population.

Though a large number of concerns were expressed regarding the methodology and the conclusions of the paper, nonetheless some participants expressed their interest in this approach and recommended that it be given further study.

A paper surveying the consequences of the transfer of military technology on the import capacity of developing countries concluded that funds available to satisfy development potential are drastically reduced as a consequence of extensive import of military technology. Further, the introduction of advanced complex weapon systems calls for an infrastructure and an industrial base non-existent now, nor likely in the near future in the recipient countries. Moreover, this industrial infrastructure, because of its emphasis on capital-intensive, labour-saving technologies, is not appropriate to the development needs of recipient countries.

It was argued that alternative military strategies, implying less complex military technology which could be provided from a national industrial base at reasonable costs, would increase the developing countries legitimate right and ability to defend themselves against external aggression while at the same time serving other development goals.

A paper investigating the interrelationship between military dependency and development pointed out that the impact of military technology transfers depends upon the development strategy pursued by recipient regimes. Three development approaches were considered: evolutionary open door; state capitalist directed; and state socialist mobilizational. It was hypothesized that insofar as technology transfers are associated with Western military training programmes, the former are likely to impede rather than promote economic, social and political development. Data on training programmes, ideologically motivated military interventions and development performance are related to the central thesis. In the discussion it was described in detail how the economic crisis in the capitalist system leads to an open door policy. The Brazilian model resting on repression and on the concept of national security as an ideological legitimation was mentioned as the unfortunate but likely model for many developing countries in Latin America and Asia.

The question of the possible economic growth effects of higher military expenditures was taken up in another paper. It was conceded that militarization might shake additional surplus out of the economies in question, but the minimum feasible expenditure of military purposes in these countries is bound to be greater than the additional surplus, and that therefore the net effect of militarization is to reduce the surplus available for economic development. The conflict between the military interest in development (to absorb modern weapons systems) and their activity in reducing the resources for growth, leads to conflicts within the military which are as much an independent brake on social and economic development as a source of danger. Discussion of the paper centred on its underlying assumptions that arms and the military sector are intrinsically unproductive, but that there is very little free

choice for Third World, indeed all, countries in the current world dispensation.

An invited speaker presented a highly stimulating and concise overview of the present world situation and the foreseeable future with respect to nuclear war involving the great powers, and how the Third World fits into the picture. From a historical viewpoint he felt that the struggle for hegemony has been dominant amongst the causes for war. At the present time one witnesses a stand-off between the great powers because the damage which would be experienced from a nuclear war is unacceptable. However, with the rather dim prospects of really significant disarmament and the continued qualitative arms race it is likely that sooner or later a Third World war involving nuclear weapons will occur. The speaker observed that with respect to both the great powers and the Third World, armaments tended to reach the level which particular economies could stand, and in certain cases well exceeded that limit. Disarmament will not be possible unless the big powers are partners to it.

The observation was made that there seemed to be a close correlation between relatively low armament, underdevelopment, and instability. One could similarly observe a relationship between heavy armament, development and a state of society which appears at peace. The findings of these correlations, though not terribly surprising, were considered nonetheless important in assessing the options available for reaching world peace. It was argued that war is the oldest institution and thus the hope of eliminating it is very limited; nevertheless, the task for the next generation is to eliminate war as an institution if we don't want to end in a catastrophe. This is particularly so because looking at the heavy armaments in industrial countries it is not unrealistic to describe the armaments inflow into developing countries as just beginning. Moreover, the all pervasive "national security" is often used as a legitimization for arming; but it would also have to be considered that ruling elites in developing countries see themselves as threatened from inside and outside, and perceived threats have the tendency to become real threats. Some doubts were voiced whether the thesis of a causal relationship between high growth rates and repression could be quantitatively substantiated, but this did not diminish the concern for finding solutions for the problems.

In the continuing discussion it was argued that a separation of industrialized and developing countries in analysing militarism and causes for armaments would not correctly describe the highly synchronized world. In order to explain, however, the inter-relation in the arms transfer one would have to recognize the asymmetrical relations between industrial and developing nations.

As might be expected, discussion of effects of arms transfers ultimately moved from economic consideration to the more political ones. A paper outlining some principal problems of controlling the transfer of weapons and militarily-oriented technologies to developing countries centred on an analysis of the characteristics of political threats or perceived threats to the national security of developing countries, and possible arms control measures which might be derived from the political considerations. Three distinct approaches to control arms transfer or arms development were described and discussed. Though there was no agreement as to the best approach to the problem of controlling arms transfer, there was complete agreement that ultimately the control of such transfer to the Third World must be treated in the context of general global disarmament.

A paper on Technology and Militarization in Third World countries distinguished between militarism, a society with some degree of mass support for the official use of militant

styles, internal force and external aggression and, on the other hand, militarization, the simple quantitative spread of weapons and military institutions. Further exploration of the distinction will, it was hoped, take place in a future Pugwash Symposium devoted to the topic of militarism as proposed by the Norwegian Pugwash group.

Two papers addressed themselves to the problem of controlling the flow of weapons technology to the Third World. One, on South Africa, showed how difficult it would be to do so given the importance of White South Africa as an extension of Western economic interest and the special importance it has as a market for the late-comers amongst arms and arms-technology suppliers. The second paper suggested that the best means of control would be through regional technology-import limitation agreements on the part of the importing countries, general agreements to disclose transfers and to deny supplies to non-signatories of such pacts on the part of the suppliers, and discussion and agitation on the part of international bodies.

In the discussion many of the difficulties of control were stressed, from the probable refusal of some countries to adhere to regional pacts to the likely evasive action by multinational corporations which are increasingly important in the supply of weapons technology.

A final paper at the Symposium concentrated on selecting the factors that could encourage governments and peoples to seek peace through means other than preparing for war. The limited international collaboration following the Helsinki Agreement, the international cooperation in attempting to solve the current economic crisis, and other recent moves encourage the belief that nuclear-free zones and control over arms technology in the Third World is possible despite the obvious difficulties; and that the emergence of the oil-producing countries as an independent factor in the arms race, as a source of world inflation and of further impoverishment in the rest of the Third World, might be reversed.

In the discussion it was argued that the Third World alone could not be blamed for the arms race or world inflation, that the best guarantee of peace is human resources development; but that control over arms and arms technology is best achieved piecemeal and that there is need to improve contact between the protagonists of such controls, to advance peace research, and to appeal to public and scientific opinion. The underlying assumption that wars and the preparation for war resulted from irrational perceptions was questioned for Third World countries where war can once again be seen as the continuation of politics by other means.

The discussion ended with many of the participants identifying topics for further discussion, many of which were suggested in previous sessions: growth/development/welfare; the role of the military in political and economic development: and the suggestion that future meetings be prepared for with general position papers reflecting past discussions.

M.K.
V.R.
H.W.

Concluding Remarks by K. Gottstein

I think we have learned a lot during the last three and a half days. At least I have. One of the things we have learned is that there are several different ways in which the difficult subject of this Symposium can be approached.

One of the great dangers to peace is that some people become so enthusiastic about their new insights into the forces which drive human history that they tend to explain everything by these newly discovered relationships and are even prepared to force other people to take the same view. History gives us many examples. The Green Flag of the Prophet and the Cross have both been exported using the sword, and in our day the attitude of intolerance and the suppression of views by force still survive.

In has been suggested by one participant in this Symposium that Pugwash should not be satisfied with looking at the symptoms, with staying at the surface of the problems. Pugwash should, according to this participant, apply social science, go to the roots of the problems, and not be afraid to be called a "radical" movement. I do not share this opinion. Social science is important, and should be applied by social scientists in their professional work. But if one looks at a congress of social scientists one finds that social scientists are by no means united in knowing what the solution to the world's problems is. On the contrary, there is bitter controversy among them regarding this point.

Pugwash, in my opinion, should not enter this controversy. Pugwash, as Professor Emelyanov has put it, should create an atmosphere in which it becomes possible for scientists from different parts of the world to discuss the great perils which mankind faces, and to apply all their influence, their experience, their knowledge in order to avoid catastrophe.

If a doctor is confronted with a patient gravely ill with a rare disease, he cannot go to the root of the problem and do time-consuming, controversial medical research before he decides on a therapy. In the meantime the patient may be dead. He must combat the fever by giving aspirin, as another participant in this Symposium said yesterday. He must hope that this will help nature to help the patient survive.

This is the situation of Pugwash. The world is complicated, there are many forces at work. We can make grave mistakes if we neglect that other people may see aspects of reality other than we do. We are not gods, nor do we have Maxwellian demons at our disposal who know everything and take into account everything. All we can hope for is to understand enough to realize that truth is not owned by any one ideology, by any one group, any one nation. And in particular, we must understand that in our technological age the test of which society is better organized can no longer be war. That was the test of the past as long as history has been recorded, and probably longer. But now it has become evident that war as an institution has no future because if it continues mankind has no future. And there cannot be war without mankind.

This statement, unfortunately, is no contradiction to the expectation that wars will continue to happen in the Third World and, in the long run, also world-wide, as long as the reasons for war have not been removed, or as long as an alternative method for settling disputes has not been invented (perhaps it has been invented!) and accepted by everybody concerned.

This may all seem rather pessimistic. Nevertheless, I consider myself an optimist. An optimist is not one who closes his eyes to reality. He is one who, having looked at reality, does not resign. An optimist never gives up trying.

If this Symposium has contributed to a better understanding of reality, and to a better understanding of the differing views about how to deal with this reality, and to an optimism in the sense just mentioned, then we have achieved something even if Professor Rothschild was right when he said that we have not dealt adequately with the actual problems of militarily-oriented technologies in developing countries.

List of Papers Submitted

U. Albrecht -- Technology and Militarization of Third World Countries in Theoretical Perspective.

E. Benoit -- Growth Effects of Defence in Developing Countries.

S. Chubin -- Implications of the Military Build-Up in Non-Industrial States: The Case of Iran.

E. Ehrenberg -- Some Principal Problems of Controlling the Transfer of Weapons and Militarily-Oriented Technologies to Developing Countries.

A. Eide -- Arms Embargo and the Supply by Industrialized Countries of Military Technology: The Case of S. Africa.

A. G. Frank -- Accumulation Crisis, Arms Production and Militarization.

J. F. Freymond -- Toward the Control of the Transfer of Militarily-Oriented Technologies to Developing Countries?

W. F. Gutteridge -- Military Assistance and Political Attitudes in Developing Countries.

Mary H. Kaldor -- The Significance of Military Technology.

M. Kidron -- Remarks on the Military and Development in Economically-Weak Countries.

Signe Landgren-Bäckstrom -- The Transfer of Military Technology to Third World Countries.

P. Lock and H. Wulf -- Consequences of the Transfer of Military Technology for the Development Process.

M. Mahfouz and E. Galal -- Endogenous Military Technology Capabilities. A New Dimension to the Middle East Arms Race.

M. Mushkat -- New Developments in the Supply of Arms to the Third World: Its Motivation and Consequences.

M. D. Wolpin -- Military Dependency versus Development in the Third World.

Abstracts of Papers

U. Albrecht (FRG)

TECHNOLOGY AND MILITARIZATION OF THIRD WORLD COUNTRIES IN THEORETICAL PERSPECTIVE

The massive transfer of sophisticated military technology to Third World countries is today a major concern. A theoretical understanding of the phenomenon is needed to provide for appropriate assessment and counter-measures.

The problems of defining militarism are examined, and a universal definition is found likely to be meaningless. An appropriate conceptualization of current Third World militarization is outlined, based on three internal political dimensions. However, these aspects are found to be insufficient. Militarism in Third World countries appears to be a dependent, derived phenomenon, whose roots must be sought in the relations of peripheral countries within the global system. Five such external governing factors are identified.

The search for alternatives that would avoid the negative consequences of militarization is directed beyond the concepts offered by the bigger world powers.

E. Benoit (USA)

GROWTH EFFECTS OF DEFENCE IN DEVELOPING COUNTRIES

There are significant statistical indications that LDC defence programmes may, on balance, have benefited somewhat the growth of their civilian economies, in ways hitherto inadequately appreciated. This suggests that less emphasis on maximizing traditional investments, and more emphasis on improved training, motivation and productivity in the non-industrial sectors (including the re-patterning of certain defence programmes) might contribute substantially to maximum development, reduce defence burdens, and later facilitate LDC arms-control agreements.

To the extent consistent with military security, military programmes will yield maximum development benefits if they: 1) train large numbers of civilians in skills partly utilizable in civilian roles, and maintain them as reserves rather than as a large standing army; 2) build dual-use transport and communication infrastructures (partly utilizable by civilians); 3) minimize the domestic production or commercial import of advanced and heavy weaponry, and rely mainly on labour-intensive intermediate technology, supplemented by aid-financed advanced weapons with primary defensive capabilities and low maintenance costs, such as anti-tank and anti-plane missiles; and 4) maximize civic action programmes to reduce the overhead costs of forces and equipment required for deterrence but rarely for combat.

S. Chubin (Iran)

IMPLICATIONS OF THE MILITARY BUILD-UP IN NON-INDUSTRIAL STATES : THE CASE OF IRAN

Iran's perceptions of current international relations are presented as the context for its search for security, and potential sources of conflict are identified. Against this background, Iran's arms expenditure and patterns of arms acquisitions are explained, including the overall procurement policy, the purposes of such arms purchases and the balance between the import of arms and indigenous manufacture.

The domestic implications of this arms build-up are examined with reference to security and growth, to the infrastructure and manpower constraints and to the position of dependence that is entailed. The regional implications are then investigated, in terms of regional security and intra-regional arms transfers.

Finally, the question is posed whether Iran can serve as a model for other non-industrial states or whether the case of Iran is unique.

E. Ehrenberg (FRG)

SOME PRINCIPAL PROBLEMS OF CONTROLLING THE TRANSFER OF WEAPONS AND MILITARILY-ORIENTED TECHNOLOGIES TO DEVELOPING COUNTRIES

Control of the transfer of arms and militarily-oriented technologies to developing countries cannot be treated as an isolated problem. It is inseparable from the question of disarmament in general, and from relations between developing and industrialized countries. There are the same complexes of interests among the ruling élites and the same fears within the masses of the people in industrialized countries and in developing countries.

A. Eide (Norway)

ARMS EMBARGO AND THE SUPPLY BY INDUSTRIALIZED COUNTRIES OF MILITARY TECHNOLOGY : THE CASE OF SOUTH AFRICA

The United Nations has been less than effective in opposing military build-up, in the Third World as well as in the industrialized countries. Some efforts, however, have been made. In this paper, the efforts at armament embargo and their consequences are discussed. The focus is on South Africa, one of the few countries which has been placed under an arms embargo by the Security Council of the United Nations.

The paper examines the way in which an armaments embargo, when its intent is not supported by some major industrialized countries, leads to the cooperation of high-technology countries in the formation of a local technological capacity which, directly or indirectly, may come to serve military purposes.

A. G. Frank (USA)

ACCUMULATION CRISIS, ARMS PRODUCTION AND MILITARIZATION

A renewed far-reaching crisis in world capital accumulation promotes an accelerated qualitative change in the international division of labour, including industrial production and arms manufacture in the Third World.

The accumulation crisis and associated deficiencies in demand, especially in the capital goods sector, as well as balance of payments problems both in the developed capitalist countries and in the productively more advanced underdeveloped ones, promote the production and sale or export of armaments as an alternative to the civilian sectors.

The current and foreseeable changes in the international division of labour and the economic and political crises in the underdeveloped countries create the need and pressures for the militarization of society and especially the formation or strengthening of military corporativist states.

J. F. Freymond (Switzerland)

TOWARDS THE CONTROL OF THE TRANSFER OF MILITARILY-ORIENTED TECHNOLOGIES TO DEVELOPING COUNTRIES?

The questions of the transfer of militarily-oriented technology and of the establishment of arms production capabilities cannot be dealt with in isolation. They must be seen in the context of the entire disarmament and arms control negotiation process. However, disarmament can be seen as a global issue with a final objective, general and complete disarmament, which can be achieved by a step-by-step approach, each of these steps being more-or-less related to each other.

With this framework in mind, suggestions are made for measures that could be taken by importers of technology, measures that could be taken by the suppliers of technology, and for a possible role for the U. N.

W. F. Gutteridge (UK)

MILITARY ASSISTANCE AND POLITICAL ATTITUDES IN DEVELOPING COUNTRIES

Two questions are posed: Is the source of military assistance - weapons and training - an important determinant of political attitudes in the recipient country? Is there a sense in which military professionalism is transnational?

An examination of military assistance programmes as a means of furthering the national interest of the donor is followed by an attempt to relate the content and style of military education to the subsequent political actions and pronouncements of individuals. Reference is made particularly to the military elites of Ghana and Nigeria. Present evidence suggests that in many cases the military have no socio-political interest in the ideological sense, their primary concern being for their professional interest, but that elitist military traditions from whatever source are a danger to the political development of politically underdeveloped states.

Mary H. Kaldor (UK)

THE SIGNIFICANCE OF MILITARY TECHNOLOGY

The significance of technology transfer, both for the recipient and for the supplier, are examined, viewing technology as a social system rather than as an abstract body of knowledge applied to a piece of equipment. The form of today's dominant military technology, the weapon system, is analysed in relation to its underlying structures (social organization, industrial capacity) and to the hierarchical structure of which it is a part (military and industrial).

The implications of such an analysis for the future of the international military system are followed through.

M. Kidron (UK)

REMARKS ON THE MILITARY AND DEVELOPMENT IN ECONOMICALLY WEAK COUNTRIES

Economically weak countries share with the stronger countries a large stock of weapons produced in a few centres. In consequence, their armed forces share the limited range of strategy and tactics determined by these weapons and hence also share organizational forms and attitudes. These similarities have helped foster economistic and functionalist views of the military in economically weak countries as progressive in an economic sense.

An examination of attempts to graft modern weapons production on to the underdeveloped industrial structure of these countries (with particular reference to India and China), shows the falsity of such an assumption, and the significance of the failure of such attempts is pointed out.

Signe Landgren-Bäckstrom (SIPRI)

THE TRANSFER OF MILITARY TECHNOLOGY TO THIRD WORLD COUNTRIES

The means whereby arms may be acquired by Third World countries are examined. This may be through importation (ranging from the direct import of arms to the import of military technology or of technological know-how), or through domestic production (ranging from the assembly of imported sub-systems to indigenous research and development of new weapons).

The military, political and economic motivations for the acquisition of arms are analysed, and related to the debate on development strategies.

There follows a factual survey of the development of domestic arms industries in Third World countries, and of the categories of arms produced. Two case studies, Egypt and Iran, are used to illustrate a new trend in the proliferation of military technology.

The paper concludes with an examination of the relationship between the militarization of Third World countries and problems of underdevelopment.

P. Lock and H. Wulf (FRG)

CONSEQUENCES OF THE TRANSFER OF MILITARY TECHNOLOGY FOR THE DEVELOPMENT PROCESS

The intention of this paper is to contribute some evidence to the hypothesis that qualitative changes, or at least changes of extraordinary quantity, in the role of the military and its impact on the formation of society are surfacing as a result of the present unprecedented process of militarization of the Third World.

The paper focuses on the consequences for the pattern of industrialization and development of the huge flow of sophisticated technologies into countries not based on a complex and highly industrialized economy. There are very few studies available on this problem that differentiate between civil and military imports, and hence analytical tools have still to be developed. This paper therefore cannot be more than a primer and is restricted to some hypotheses as possible guidelines for future empirical research.

M. Mahfouz and E. Galal (Egypt)

ENDOGENOUS MILITARY TECHNOLOGY CAPABILITIES: A NEW DIMENSION TO THE MIDDLE EAST ARMS RACE

The stages of development of the Middle East arms race from 1948 to 1973 are examined. A new cycle is identified in the transfer of military technology, as a rational development of the uncontrolled expansion of the arms race towards an artificial dynamic balance.

The implications of this trend for patterns of international developments in acute conflict areas are discussed, and an alternative is suggested.

M. Mushkat (Israel)

NEW DEVELOPMENTS IN THE SUPPLY OF ARMS TO THE THIRD WORLD: ITS MOTIVATION AND CONSEQUENCES

The dangers inherent in the military doctrine of deterrence held by the adversary blocs are pointed out. Some analyses of this doctrine are examined and found harmful in their simplification and avoidance of vital issues, and in their pessimistic conclusions. The purpose of this paper is to strengthen the assumption that as war and peace are man-made phenomena, efforts to achieve some measure of the shalom in the world may become less Utopian as research provides more information and guidance on this issue to governments, political parties and mass movements. Objective study of positive developments may be a more important contribution to peace than the maintaining of speculation on structural violence and the peripheral status of the Third World as a greater evil than war.

M. D. Wolpin (USA)

MILITARY DEPENDENCY VS. DEVELOPMENT IN THE THIRD WORLD

The impact of military technology transfers depends upon the development strategy pursued by recipient regimes. Three development approaches are considered: evolutionary open door; state capitalist directed; and state socialist mobilizational. It is hypothesized that insofar as technology transfers are associated with Western military training programmes, the former are likely to impede rather than promote economic, social and political development. Data on training programmes, ideologically motivated military interventions and development performance are related to the central thesis.

FUTURE OF PUGWASH

The following articles continue the debate in the last few Newsletters on the future of Pugwash. They have been selected from a number of interesting formulations to reflect different views and approaches to the problem, which is now under review by the Pugwash Council. The Council will prepare proposals on this subject for consideration and decision by the 27th Pugwash Conference in Munich. Individuals, national and regional groups are urged to make their views known to their Council representatives. The list of questions posed was given in the April issue of the Newsletter (Vol. 13, p. 186).

J. Rotblat (UK)

FUTURE ORGANIZATIONAL STRUCTURE AND ACTIVITIES OF PUGWASH

1. Scope of Activities

Practically all problems discussed in Pugwash are also discussed in a variety of other fora, governmental and non-governmental. It would be wasteful merely to duplicate the efforts of other organizations. Therefore, we should undertake only those activities for which our chief characteristics make our contributions unique. These characteristics are:

a) we are a body of scientists, i.e. people with specialized technological knowledge, and well versed in the scientific method;

b) we participate in individual capacities and, therefore, we are not restricted by any prior obligations or commitments.

Pugwash is a body of 'amateurs' and should remain such. Since our participants are actively engaged in scientific work, and can carry out Pugwash activities only in their spare time, we cannot undertake projects which demand full-time involvement. Our main role should be to review critically the work of professional bodies, and suggest new lines of investigation for them; occasionally we may carry out studies in depth on well defined topics. We should also have an educational role in providing relevant information to the scientific community and - occasionally - the general public as well.

2. Priorities

Arising from the above, our efforts should be concentrated on those problems in which we are most competent, and which are not tackled better by other bodies. The relevance of these problems to international conflicts and the security of mankind is a vital factor in deciding on priorities.

Problems of disarmament and arms control, particularly the nuclear arms race, CBW, and other weapons of mass destruction, fulfil the above criteria. Historically, too, the reputation of Pugwash rests on its involvement in these issues, and we are likely to be effective if we continue to concentrate on them.

Other problems may be included in the Pugwash programme, using as a criterion their impingement on world security issues. Under this category will come certain aspects of the problems of developing nations, world energy resources, and some environmental issues. Problems of international scientific collaboration and the social responsibility of scientists should, of course, continue to be debated in the Pugwash forum.

3. Our Audience

If our deliberations on problems of world security are to be effective, our findings must be primarily addressed to decision-making bodies; in practice this

would often mean addressing ourselves to scientists who have the ear of their government. Next in priority is the scientific community; we want to stimulate scientists to take an interest, and think about, these topics, as this is the most likely way to lead to the generation of new ideas.

Influencing public opinion is, however, also important; it may in fact be the most important in the long run. Pugwash should, therefore, attempt to address itself to the broad public opinion as well, but through a different type of activity (see answer to question 9).

4. Effectiveness

We can increase our effectiveness:

a) by having more eminent scientists participating in the Movement;

b) by concentrating on problems on which we can speak with authority;

c) by making our public statements meaningful instead of platitudinous;

d) by insisting on Symposia and Workshops being real studies in depth.

5. Eminent Scientists

This is directly linked with question 4: eminent scientists will join us if we are more effective, and vice versa. We have to be more selective in the choice of participants. It is much more important to have high calibre participants - and young scientists of promise - than to fill national quotas with non-entities (scientifically). In particular, the governing bodies of Pugwash should consist of persons who are highly regarded in the scientific community.

6. Scientific Disciplines

Physical, biological and social scientists should all participate, and the emphasis on particular disciplines should be dictated by the subject to be discussed at a given Conference or Symposium.

7. General Structure

Pugwash has already become too much organized (see answer to question 8). We should return to informality. The corollary to one of the chief characteristics of Pugwash - participation as individuals and not as representatives or delegates - is the minimum amount of organization compatible with efficiency. More formality would mean more bureaucracy and diversion of effort from questions which matter. If we do our job well we shall be listened to and invited to participate in meetings of the UN and other organizations, even without a formal NGO status.

8. Governing Bodies

The Council has now become far too large to carry out the original task of the Continuing Committee, i.e. to run the routine activities of Pugwash. It should be recognized as a policy-making body - meeting once a year - and not be concerned with organizational matters. These should be left to the Executive Committee, which should refer to Council mainly on matters of policy.

The changes introduced in the recent years have tended to make the governing bodies of Pugwash somewhat like a UN organization. This is contrary to the basic characteristics of Pugwash. It is necessary to return to the old spirit of informality. This would necessitate scrapping the present cumbersome system of electing members of Council; ending the rotation system; and - most importantly - doing away with attempts to balance each committee by considerations of nationality rather than expertise. A return to the old methods, based on mutual trust and common sense, would remove many of the difficulties recently encountered in Pugwash.

9. Conferences and Symposia

The annual Conference should continue to be the main event of the Pugwash activities. These Conferences enable a larger number of scientists to participate - making them

feel that they belong to the Pugwash community - and to report back to other scientists in their home countries. The main task of the Conference should be to review and critically analyse the events of the past year in the areas of interest to Pugwash, and to suggest lines of further development. Reports of Pugwash Symposia and Workshops should be received in plenary sessions, but the review of other events should be carried out in Working Groups, which should be sufficiently small to make possible talking round the table. The annual Conference should not deal with organizational matters; this should be left to the Quinquennial Conference.

Efforts should be made to forward the reports from Working Groups to influencial scientists and governments soon after the Conference. A Press Conference to promulgate a public statement should be held only if issues have emerged from the Conference which are considered important to convey to the general public. In such cases a real effort should be made to impress public opinion.

Symposia should continue to be held but their original object should be adhered to, i.e. to provide a forum for the study in depth of a specific topic. Only Symposia which fulfil this criterion should be approved by Council. Participants should be selected on grounds of expertise rather than of nationality. It should become the rule rather than the exception for a Symposium to produce a monograph, which would help to stimulate public debate on important issues.

Apart from Symposia, National Groups should be encouraged to organize debates, teach-ins, or other types of meetings, which would have an educational character and bring Pugwash into better contact with the general public. Speakers from other countries should be invited to these meetings to stress the international character of the issues. (A good example to follow is the series of public lectures which was organized by the Japanese Pugwash Group after the Kyoto Symposium). The Executive Committee should help National Groups in this activity.

10. National Groups

The tasks of National Groups should be:

a) to disseminate Pugwash ideas and activities among scientists in their country;

b) to organize international Symposia or Workshops in collaboration with the Central Office;

c) to organize educational Pugwash activities;

d) to nominate participants in the annual Conferences;

e) to provide costs of travel for scientists from their country to Conferences and Symposia;

f) to contribute to the cost of running the Central Office.

The National Groups should under no circumstances become a buffer between the Executive Committee and the scientists in a given country. In particular, the Executive Committee should be free to communicate directly with scientists in any country, and invite them to Symposia, but soliciting advice from and providing information to the officers of the National Groups. The principle that the Executive Committee can directly invite participants to the annual Conferences - although very seldom practised in countries where there exist National Groups - should be maintained.

11. International Discord

Pugwash is concerned with the practical aspects of preventing armed conflicts, and has no machinery to carry out long term sociological studies. Inasmuch as it is feasible for Pugwash to do (see answer to question 1) it should be concerned equally with the causes and the control of international discord.

12. North-South Antagonisms

The answer to this is the same as to question 11, read in conjunction with the answer to question 2. Insofar as North-South antagonisms threaten world security they should be as much a subject of Pugwash concern as East-West antagonisms.

R. Revelle (USA)

THE PURPOSE OF PUGWASH -- PAST AND FUTURE

(presented at the meeting of the Canadian and American Pugwash Groups, Pugwash, Nova Scotia, July 15-18, 1976)

At the time of the founding of Pugwash, both the rhetoric and the realities of international affairs were quite different than they are today. The Cold War was, you might say, at its height or depth. It was seen as a conflict between a monolithic, imperialistic, expansionist Communism and something called the Free World. Today that seems like a rather ironic designation of the opponents.

The area of confrontation between the two power groups was primarily in Europe and particularly between East and West Germany. The United States was attempting to draw a cordon sanitaire around the Soviets and the mainland Chinese by a changing series of alliances including SEATO and the other Asian treaty organizations. The United Nations and all its specialized agencies were dominated by the United States and its allies. We used to brag about the fact that we never had to exercise a veto. We always had a majority in all these UN agencies.

Twenty years ago, there were only three nuclear powers with a relatively modest arsenal of nuclear weapons. There was a rapid development at that time of so-called strategic weapons -- both the technology and the theory of strategic weapons, the theory of deterrence, and counter-force strategy. There was a lively discussion of the possibilities of the usefulness of ABM's. Many people were enthusiastic about Civil Defence as a part of the nuclear strategy. People that did participate in Pugwash meetings from so-called less developed countries were people like Vikram Sarabhai who were basically fascinated by this theoretical development. For him, it was a kind of chess game. He was a very upper class Indian intellectual and part-time professor at M. I. T. and he thought of the problems that Pugwash was confronting in a very similar way to those people from the United States, the Soviet Union, Canada, and Europe who took part at that time.

There was no satellite recognizance. The level of intelligence about the other sides' readiness and level of military development was very much less than it is now. The background situation was quite different also. Africa was still colonial. There were hardly any free, or so-called independent states in Africa. Indo-China, Vietnam, Laos, and Cambodia were still French. Europe was floating to an unprecedented prosperity on a sea of Middle-Eastern oil. As a result of the very great success of the Marshall Plan in Europe, people were still optimistic about the possibilities of development in so-called less developed countries. The problems of population, food, resource depletion, and environmental deterioration were not very prominently discussed -- or very widely discussed. Some of them, such as environmental destruction, were hardly even thought of as problems. It was in 1963 that Rachel

Carson published her book Silent Spring. It was generally denigrated by so-called respectable scientists at that time. George Kistiakowsky was one of the few people who took this kind of problem seriously but not very seriously.

In 1976, almost twenty years after the founding of Pugwash, it is possible to say that the Cold War has become a tradition more than fact. It is hard to remember what the hostilities were about. The problem seems to still exist but we don't quite understand why. China, the Soviet Union, and the U.S.A. are engaged in a much more conventional kind of balance-of-power politics than seemed possible in 1957. The whole basis of the balance of power has changed.

We have now enormous nuclear arsenals, so large and capable of so many kinds of overkill that one can say that in themselves they paralyse action on the part of both the Soviet Union and the United States. We could actually act much more forcefully in many areas if we weren't so scared of our own weapons.

Some of the alliances that existed in 1957 hardly exist today; others have been badly eroded. For example, the Southeast Asian Treaty hardly exists; NATO has been eroded on its eastern flank by the conflict between Greece and Turkey; our alliance with the Philippines and with Korea is very, very shaky. Our alliance with Japan is still firm, but even that has perhaps some underlying weaknesses.

There has been a considerable proliferation of nuclear weapons. Three new powers, China, France, and India, have acquired nuclear weapons and perhaps several others are very close. There are no more colonies. There is a host of new nations -- something like 145 new nations altogether. The U.N., and particularly its specialized agencies, are dominated by what is euphemistically called "the group of 77", but what is actually about 120 poor countries.

The principal confrontation is no longer in Europe but between the rich and the poor countries. This confrontation is compounded and confused by the rise of the organization of petroleum exporting countries which to some extent is able to blackmail and to use its powerful economic weapon against the other rich countries. These OPEC countries are uniformly less developed countries, poor in all respects except for their oil resources. Some are medieval in their social structure and their level of technology.

The confrontation between the rich and the poor countries has recently taken the form of a call for a new economic order which essentially amounts to the establishment of an economic system which would ensure a better distribution of resources, principally in terms of trade for the poor countries. It would guarantee prices for their products and hopefully hold down the prices of what they have to buy. If one goes to any international conference these days, you hear the same rhetoric. At Habitat, at the Law of the Sea conferences, at the population conference in Bucharest, and the environmental conference in Stockholm, the tone is the same. It doesn't make any difference what is agreed in advance. Almost every country that came to Habitat agreed in advance not to bring in the Middle East situation. But after only two days, a very strong resolution was introduced by Iraq and that distorted the discussion from then on.

At the present time, in spite of our legitimate concern about the possibility of a nuclear holocaust, the principal international problems are first, the immediate problem in the Middle East -- the danger of an explosion in the Middle East -- and then, the long range problems of scarcity of food, population growth, resource depletion and environmental decay. The principal world questions related to these problems, it seems to me, are first, how far can development go in the light of resource and environmental limitations? How can one estimate the quality of life for the average human being in the next fifty years? By the average

human being I am, of course, talking about the human beings of the less developed countries because 90% of the world's population will be in those countries fifty years from now. Another related question, or perhaps a more practical one, is how can human needs be met with the resource-base that we have, with the technology that we have or can develop? This is a popular rubric, this question of meeting human needs. It has been discussed at other Pugwash meetings; it is often talked about by such groups as the various consortia headed by the World Bank, the A.I.V., and the National Academy of Sciences committee on science and technology.

The essential thing I think we should keep in mind here is that we are going down an entirely wrong path. We talk only about meeting minimum needs -- a minimum diet for people, minimum clothing or shelter, minimum physiological needs. The key word when we talk about human beings is the word "human". Human beings have a quite different group of needs than simply those that they share with all other animals. One characteristic thing about human beings is that they have been described as time-binding animals -- animals that will remember the past and think about the future. And the ability to think about the future means to plan for the future and in many cases to hope for the future. This is an essential human need, something you cannot do if you are living in poverty and misery. The basic thing about being poor is that you cannot plan ahead because your plans never work out. The human need for hope, for realizable aspirations is absolutely essential and must be met. All the evidence to date shows that only where there is hope, and realizable aspirations have the birth rates come down. If the present rate of population growth continues, we are eventually going to come up against a Malthusian trap where the death rates will rise to meet birth rates, resulting in a population of around 50 billion people. If on the other hand birth rates can be brought down, it is not entirely impossible, in fact it is quite likely that the population of the Earth can level off to about ten or twelve billion people. This really seems to depend on the possibility and the capability of meeting "human" needs.

One question is how far can we go toward meeting these needs? That seems to me to be the basic problem of our times. I think particularly about the world's poorest billion; the test of our humanity is the last human being.

So much for the background of the present, 1976. What we want to talk about now is what can Pugwash do. The one thing that has happened is that the Pugwash Movement has changed in character over the last twenty years. It has changed in two ways: there are a lot more social scientists involved now than there used to be and, perhaps more critical, there are more countries involved. First there are a lot more countries in the world and second many of the people from those countries take part not only in Pugwash meetings, but in running Pugwash. This situation has not been accepted with open arms by our Soviet colleagues who still think of Pugwash as primarily a means for achieving a political dialogue between Soviet and American scientists with the Canadians and the French and the English and other people present in the background for purposes of respectability. However, except for the Soviets, almost everybody else thinks that this is a truly international movement in which all countries can play a fundamental part.

Now we come to the important questions. A. What can Pugwash do uniquely about these problems of food, population, resources and the environment? B. What can it do effectively about these problems? And C. In the process of thinking about this fourfold problem, are we weakening or making ineffective our previous dialogue, our old problem of nuclear warfare? Should Pugwash

deliberately continue to try to talk about a range of problems or should it really make a decision to go back to the basic problems of nuclear war and nuclear peace? The latter is the area where there are some experts in Pugwash; indeed Pugwash has more knowledgeable people in this particular area than any other comparable group in the world. At the same time, it is painfully obvious at most Pugwash meetings that the majority of participants know little about the problems of food, population, resources and the environment, whereas other groups seem to be more expert at these.

I guess I would come down on the side of a broader-based Pugwash, a Pugwash which deals with problems in which scientists can usefully talk to politicians. The essence of Pugwash is really not the concentration on nuclear war but the idea that scientists must interact with politicians and that the way to do this is to encourage and stimulate each other to do so, that is, to develop possibilities for international political cooperation which involve technical questions. Specifically, Pugwash is an organization of natural and social scientists. It is a very loose organization that does not have any accredited members. You do not become a Pugwash fellow, a Pugwash professor; you simply participate in this interesting Movement. But it is an organization of scientists and it is a question of what scientists can do on the questions of food, population, resources and the environment.

I can think of several things. They can help invent institutions, for example, the International Foundation for Science. Other people invent institutions also; Pugwash didn't invent the U.N. University or the International Federation of Institutes of Advanced Study, but we did have something to do with the creation of the International Institute for Applied Systems Analysis and with several other new international institutions. The second thing we can do is to encourage our scientific colleagues in developing countries, in poor countries, to work on what you might call "useful" research and development, research and development which will be of value in solving these basic problems we have been talking about. This is, in a sense, a question of giving prestige to those problems, giving intellectual sanction to them as important, exciting, interesting problems where results can and should be published in respectable scientific journals. Third, we can think about research problems that can be dealt with in developed countries as well as underdeveloped countries, and encourage people to work on those problems -- for example, problems of human reproductive biology, problems of increasing efficiency in photosynthesis, of making biological nitrogen fixation more effective and useful. The new techniques of somatic cell genetics are in the forefront of biological science today and, at the same time, they are of the very greatest importance in changing the world in terms of the agricultural situation. Significant results may be only a decade away.

I guess the most important thing scientists can do by talking, thinking and writing together, is to define problems. Here the question of confrontation between scientists in the rich countries and the poor countries is very important. It is just amazing how many misconceptions there are on both sides. These misconceptions can, in many cases, be dispelled by discussions that are multi-national in the sense that participants represent many countries but come together to talk to each other on a personal level. The problem is how do we do this most successfully. Harvey Brooks has observed that the people he knows who are concerned about development usually are not present at Pugwash meetings. This is partly because most of the people who have been in the development business are economists. The economists were sort of the physicists of the 1960's. It turns out that development is a lot more complicated than physics on the one hand and economics

on the other. Scientists need to learn about these problems too. Pugwash can and should be part of the educational experience, the problem definition and formulation experience, and the solution experience with regard to these questions.

M. A. Markov (USSR)

SOME THOUGHTS ON TWENTY YEARS OF THE PUGWASH MOVEMENT

The development of mass destruction weapons has led to a real threat of nuclear war. Mankind is in a tragic situation. Two decades ago (1957) the Pugwash Movement was born on the initiative of the major scientists of our time. Since then it has become part of the general struggle of scientists for peace.

The international situation today differs essentially from the international situation of twenty years ago. Large-scale changes have taken place in the international relations - instead of the Cold War there is a growing trend for cooperation and detente which was formulated in the language of the Manifesto as the fundamental principles of "learning to think in a new way" in international relations "not as members of this or that nation or continent, but as human beings, members of the species Man, whose continued existence is in doubt". During this time a number of bilateral and multilateral agreements have been signed which have improved international relations. An important achievement of these agreements is that almost all the countries have stopped radioactive contamination of the planet which could have occurred if the nuclear weapons tests were continued.

The significance of that achievement can hardly be exaggerated, for intensification of nuclear tests threatened life on earth even before a nuclear conflict.

The Helsinki meeting of the leaders of 35 states, the most representative forum ever in world history, produced the Helsinki Final Act broadly formulating an agreed assessment of many aspects of the present and key tasks of the near future. Here reason is prevailing. But the same cannot be said about the other aspects of the dangers facing mankind.

Material war preparations, far from ending, are being vastly intensified. This sinister process has acquired new features, which faces the Pugwash Movement with new challenges.

The arms race annually consumes about 300 billion dollars. About half of all the Earth's scientists and engineers (more than 400,000) are involved in the death industry.

In the absence of war the world lives according to war-time budgets:

a) there has been enormous progress in the qualitative improvement of "non-conventional" nuclear weapons, which reveals a terrible tendency to become more and more "conventional", and of

b) conventional weapons which become increasingly unconventional (laser-guided missiles, guns firing 1,000 shots per minute, etc.);

c) there arose the danger of scientific and technological progress being used to develop new types of mass destruction weapons;

d) new problems arise in connection with the proliferation of nuclear weapons and substantial simplification of their manufacture;

e) there is growing risk of accidental

unsanctioned outbreak of war. The improvement in the automation of launching mechanisms of modern war technology makes it possible for a world holocaust to reach a point of no return within seconds;

f) a new and sinister danger stems from the fact that a disaster can be triggered not only by irresponsibility of government leaders, but also by evil designs of gangster groups or individuals or simply the psychic derangement of people who have their finger on the push-button. More and more people have their finger on the pushbutton as autonomous systems of nuclear weapons are situated on bases scattered virtually all over the planet. There was nothing like it in the early years of the Pugwash Movement.

Our main task is to replace the ancient motto "if you want peace, prepare for war" by which our planet still lives, and the concept of "deterrents" whose absurdity has long become evident, by the principle of undiminished security of all the nations. We must find ways to reduce armed forces and armaments without damaging the security of anyone.

The question is, in the final analysis, of creating a "new" world economic order in the context of peaceful coexistence of different social systems, when the rapid decolonization progress has brought to the world arena a group of new states whose role in world politics is constantly growing.

The problems are extremely complex and have many aspects that should be made the subject of objective scientific study. Every step towards the ultimate goal is essential, which opens a vast field of activity for the Pugwash Movement.

The Mainfesto formulates the methodology that would ensure success in meeting this major historical challenge.

The Manifesto reads in part: "There lies before us continual progress in happiness, knowledge and wisdom. Shall we, instead, choose death, because we cannot forget our quarrels? We appeal, as human beings, to human beings: remember your humanity, and forget the rest. If you can do so, the way lies open to a new Paradise; if you cannot, there lies before you the risk of universal death."

An analysis of many of our setbacks in the quest for peace during the last two decades shows that they are most often attributable to "the rest". We have been unable to "forget the rest". Not forget all the rest in general. "The rest" should not impede our general progress of peace sign-posted for members of the species Man.

Military détente would release vast material resources badly needed by nations.

The creation of a "new" economic order on the planet, being a global problem (like the problem of the environment) is capable of being solved in terms of the methodology recommended by the Manifesto, i.e. without "the rest". Here partners in the "new" world economic order have the opportunity of acting as "members of the species Man" and not as opposing sides.

In the conditions of a new economic order science will play a bigger role.

Science has long become a productive force and an area where capital investment yields the best return.

We scientists can say to the nations, with all responsibility, that science can commit unlimited resources with benefit by providing full employment in productive labour for all able-bodied humanity.

We appeal to all the people of the world to create a "new" economic order which could yet turn the Twentieth Century into a Century of Peace and Science.

The main task is to preserve in the Pugwash Movement the character of universality and unity which form the main content of the Manifesto and makes the existence of the Movement important in the solution of global problems.

M. Nalecz (Poland)

THE FUTURE OF PUGWASH

I. The main purpose for which Pugwash was created in 1957 was - according to the Russell-Einstein Manifesto - the prevention of the use of nuclear energy for destruction. During the past twenty years of activity, however, the scope of Pugwash interest has been considerably extended and now includes all major problems of the contemporary world. Viewed from the perspective of changing the world situation, the Russell-Einstein Manifesto might at present be too narrow a base for Pugwash activities. However, the scope of Pugwash interest as it has been developed recently leads to great dissipation of effort, doubling the work done by specialized international agencies and, as a result, diminishes the efficiency of our activities. Therefore, I believe we should try to achieve a greater concentration in future and commit ourselves above all to the most fundamental issue of our times, namely complete and total disarmament in all parts of the world, as well as to closely related problems such as the prevention of sudden conflicts, coexistence of states having different economic and social systems etc. In pursuing this goal, Pugwash should always attempt to bring to the attention of the scientific community the new and as yet unanalysed aspects of disarmament, thus clearing the way for further detailed research. It is not only nuclear arms but also conventional means of destruction that should be the subject of Pugwash interest.

II. The effectiveness of Pugwash is to a great extent dependent on the academic credentials of its members and on their position in the scientific community of their respective countries. This is even more important with regard to the persons elected to the Pugwash Council and Executive Committee. It should be our most urgent task to initiate that programme of action directed towards bringing to Pugwash and its bodies those scholars enjoying respect and authority among their colleagues in their own as well as in foreign countries.

III. According to established Pugwash tradition, Conferences and Symposia are closed to the public. Although this tradition is sound and justified, it seems nevertheless desirable and possible in future to present more often to the general public the results of our activities. In particular the idea of initiating a series of monographs on issues within our scope of interest deserves special consideration. These monographs could be published under the supervision of an international board of editors.

A. T. Balevski (Bulgaria)

FUTURE ACTIVITIES OF PUGWASH

I think that the Pugwash Movement should not lose its identity, its preoccupation with the problems of disarmament and peace. Responding to some new problems of world-wide importance, Pugwash should not deviate from its main goals and raison d'etre - the problems of nuclear threat, disarmament and peace in the context of East-West relations.

It is true that these problems are increasingly becoming the concern of governments and governmental authorities. In my opinion, however, Pugwash should continue to deal with them and keep on the alert natural and social scientists of the world, as well as, when necessary, world public opinion, about the threat of a nuclear holocaust.

Consequently, the main goals and priorities of Pugwash need not and should not be changed. They could be changed only when the final objective is reached, when no danger of nuclear warfare exists, when disarmament became a real fact, when there are no more threats to peace.

In expressing these views, I do not imply that in a world of change Pugwash should not also change. Giving a lasting priority to the problems of nuclear threat, disarmament and peace, Pugwash (and this is only a logical consequence of its main goals) ought to give high priority to peaceful coexistence between states with different socio-economic systems and to détente. It is my opinion that all of the main ideas of the Helsinki Conference on European Security are of utmost importance not only for Europe, but for the whole world. Therefore, the strengthening of the spirit of Helsinki, its true interpretation, the fulfilment of the decisions of the Conference and of other related problems, must be one of the main new fields to be covered by Pugwash and the Pugwash Conferences.

Another problem of extremely serious importance is development. Pugwash is already placing great emphasis on this problem - and this is a very positive fact. At the same time, and the members of the Bulgarian Pugwash group have already on several occasions pointed out this aspect of the problem, Pugwash should not deal with development as such. There are quite a few specialized international bodies and agencies which are more competent and more qualified to approach development from all its possible aspects. Pugwash should discuss the problems of development from its specific point of view, namely: how does the arms race affect development, what is the impact of proliferation on development, how does development (or more correctly under-development) affect world tension, East-West relations etc. ?

At the same time, Pugwash should be opened for the discussion of some other new problems of world importance, such as pollution, population growth, problems of the situation of women, malnutrition, exploitation, social inequality, unemployment etc. These problems should be dealt with under two constraints: a) the approach to all of them should be mainly, if not only, the specific Pugwashite approach, i.e. from the point of view of the links of these and similar problems to nuclear threat, disarmament, peace and peaceful coexistence; b) the possibilities of Pugwash as far as material and human resources are concerned. Anyhow, responding to the importance of the abovemented problems, one group at each Conference might be dedicated to some of them, as was, for example the case with the problem of population growth at Oxford

and Aulanko. Other possible forms may also be discussed.

As was already pointed out, together with the nuclear threat, disarmament and peace, the specific purpose of Pugwash is to approach these and other important problems in the context of East-West relations. I would like to put great emphasis on this aspect of Pugwash, because the East-West approach in fact is not a geographical approach. It represents the approach of two different socio-economic systems to world problems, including the problems which constitute the core of Pugwash activities, and the endeavour to find common ground for the solution of the latter. It is precisely because of this that Pugwash was created, and I repeat that Pugwash could be changed in this respect only when its main goals are attained.

I do not think that East-West relationships and antagonisms are in principle identical with North-South relationships and antagonisms. That is why they cannot be put on the same level. If they would be treated as equal, Pugwash will have changed its purposes without fulfilling its aims.

This does not mean that some specific problems related to the main goals of Pugwash which concern countries geogrraphically situated in other parts of the world, could not be discussed in Pugwash. But our experience has shown that whenever such a case has occurred, it has been dealt with on the basis of the two different East-West approaches, with an endeavour to find a solution suitable to both approaches. We know that this is very difficult, but Pugwash has proved that it is not impossible.

With regard to the participants, I am of the opinion that, having in mind the goals of Pugwash and most of its recent Conferences, and the necessity to deal with new important problems (such as development and others), it is clear that Pugwash implies the participation of both natural and social scientists.

We think that in addition to the seminars, Symposia and Conferences, where many National Groups are represented, a direct connection between National Groups on a bilateral basis may prove to be a useful form of co-operation.

OBITUARIES

We regret to announce the death of the following Pugwashites:

SIR DAVID MARTIN died on the 16th December 1976 at the age of 62. Sir David was the Executive Secretary of the Royal Society from 1947. A chemist by education, he devoted his time and skill to the organization of science, and played a considerable role in many aspects of science policy in the U.K. He was also active in many international scientific organizations. He participated in the 10th and 14th Pugwash Conferences.

PROFESSOR GABRIEL STEIN, Professor of Physical Chemistry at the Hebrew University in Jerusalem, succumbed in September 1976 to a protracted illness at the age of 56. Gabriel Stein, as will be attested by all who knew him,was favoured by nature with boundless optimism, confidence and good will towards his fellow men. His researches and public activities were strongly motivated by a desire to do right by his country and the world community. He cherished his association of long standing with Pugwash, valued the meetings Pugwash afforded between adversaries, and believed in the original Pugwash spirit of a club with a mission rather than an international organization. His confidence was undaunted to the end, and the Israel Pugwash group is saddened by his departure.

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