

The BWC Protocol: Entering the Endgame?¹

12th Pugwash Study Group on the Implementation of the Chemical and Biological Weapons Conventions, 25-26 September 1999, Geneva, Switzerland

WORKSHOP REPORT

by Daniel Feakes

THIS was the sixth of the current Pugwash CBW workshop series, held in collaboration with the Harvard Sussex Program, to be hosted by the Swiss Pugwash Group. Financial assistance for this meeting was provided by the Swiss federal government and by the Canton of Geneva through the Swiss Pugwash Group. The meetings were held in the premises of the Graduate Institute of International Studies, University of Geneva. Participating by invitation were some 51 people from 18 countries (Australia, Canada, Finland, Germany, Hungary, India, Iran, Ireland, Israel, Italy, Netherlands, New Zealand, Pakistan, Russia, South Africa, Switzerland, the UK and the USA), all of them doing so in their private capacities. The present report is the sole responsibility of its author, who was asked by the meeting to prepare a report in consultation with the Steering Committee. It does not necessarily reflect a consensus of the workshop as a whole, or of the Study Group.

The workshop focused on the status of the negotiations for a legally binding protocol to strengthen the 1972 Biological and Toxin Weapons Convention (BWC). The protocol is being negotiated by an Ad Hoc Group (AHG) of states parties in Geneva. The workshop took place during the sixteenth session of the AHG and so a number of governmental experts were able to attend and offer their personal insights on the negotiations. It was apparent that while progress was being made in the refinement of the draft protocol (BWC/AD HOC GROUP/46 Part I, dated 30 July 1999), not everyone was agreed that the negotiations were actually entering the endgame. However, it was clear that the AHG was making useful progress with respect to a package of on-site visits and even on the politically sensitive question of the regulatory aspects of international cooperation.

After hearing reports on international CBW activities and initiatives, participants devoted much time to a detailed discussion of various provisions of the draft protocol, including issues relating to on-site visits, declarations and triggers, industry, biological defence programmes and to national implementation. As at the previous workshop much discussion revolved around the question of the enforcement of disarmament obligations by the international community, with particular reference to the example of Iraq. Finally, the workshop also considered measures to achieve consensus within the negotiations and to encourage universality once the protocol is opened for signature.

Reports on international CBW activities and initiatives

As is the custom within the Study Group, the workshop opened with brief reports on international activities relevant to the implementation of the CBW conventions.

¹ A list of Participants and Papers is included below in this document.

BWC: Work of the Ad Hoc Group

The workshop first received a progress report on negotiations within the AHG. The AHG was established by a Special Conference of the states parties to the BWC in 1994 which mandated the group to finish its work as soon as possible and to submit its report to another Special Conference. The presentation concentrated on the likely schedule of the endgame and on a number of key issues upon which negotiations are ongoing. The states parties to the BWC are due to meet for the fifth Review Conference, probably in autumn 2001. In order to have the protocol completed by then, the Special Conference would need to be convened around the beginning of 2001. To meet this deadline the substantive negotiations on the protocol would have to be completed by late 2000. The AHG began the consideration of a rolling text in 1997 and appeared to reach a turning point in October 1998 when the length of the text and the number of square brackets peaked. Over the years the pace of the negotiations has been quickening gradually with only 5 weeks of meetings in 1995 compared with 16 weeks in 1999. The fact that a new version of the rolling text is issued after each session of the AHG, rather than once a year as in the CWC negotiations, was highlighted as reinforcing a sense of progress. However, compared with the endgame of the CWC negotiations it was pointed out that a number of activities which were carried out then - national surveys of industry, trial inspections, regional initiatives - are absent now and that negotiations are still conducted by working-level officials. In response, some participants questioned whether it was necessary to undertake such activities, considering the experience gained in the implementation of the CWC. The workshop was told that the AHG is probably approaching the endgame, but not on all issues. The negotiations are now so far advanced that it is unlikely that external political developments could derail the whole process.

Progress has been most obvious on peripheral issues such as entry into force, ratification, accession and confidentiality. During the current session progress has also been evident on the provisions for on-site facility and field investigations. As of July 1999 18 of 23 articles in the draft protocol were well advanced. However, there has been less progress on a number of issues which are of major importance to the whole verification regime. Among such issues are those related to scientific and international cooperation, Article VII of the protocol. While progress has been good with regard to measures for the promotion of such cooperation, controversy surrounds the regulatory aspects. But the workshop was told that there appears to be room to find compromises on these issues acceptable to all states parties. Another area of sensitivity surrounds the compliance measures envisaged by the protocol under Article III, especially the provisions for on-site visits. It was pointed out that in 1997 the majority of delegations were opposed to the concept of such visits, whereas now most delegations have expressed support for a package of visits. However, the concept of on-site visits is still not accepted by all states parties and the workshop was told that a number of questions related to the objectives and conduct of such visits still needed to be resolved. The workshop heard that provisions related to definitions and confidence-building measures will likely be tackled in the final stage of the negotiations. The workshop was told that everything needed for the protocol was already included, now delegations needed to reach consensus on the final shape of the regime. It was suggested that this process could be achieved within twelve months with the necessary commitment of political will.

CWC: Progress in implementation

The workshop next heard a presentation on the progress in implementation of the 1993 Chemical Weapons Convention (CWC). On the subject of universality the workshop was told

that following a rush to join soon after entry into force, the rate of ratifications and accessions has declined this year, although the accession of Sudan in May was significant. States remaining outside the CWC regime include those which have political problems with ratification (for example, states in the Middle East) and those for which ratification is not a high priority (for example, states in central Africa, the Caribbean and the south Pacific).

With regard to the implementation of the CWC although the initial declarations of 94 of the 126 states parties have been received, many are incomplete or contain mistakes and omissions. One particular concern is the absence of a chemical industry declaration from the USA. In the absence of this declaration a number of precedents have been set regarding industry inspections which may be difficult to alter in future years. The political tension surrounding the lack of a US industry declaration has also increased the difficulty in reaching resolution of a number of unresolved issues related to industry verification. It was pointed out that in the light of the OPCW's experience the draft BWC protocol currently includes measures to ensure submission of declarations. However, it was doubted by some whether such measures were appropriate as the submission of declarations cannot always be seen as a straight yes/no question. Such measures might also impact on universality, with those states lacking the resources to submit complete declarations deciding not to ratify the protocol for fear of being sanctioned. It was suggested that a more appropriate measure might be to have a transition period between the entry into force of the protocol and the deadline for the submission of declarations.

On the subject of inspections the workshop heard that the OPCW had now conducted over 500 inspections of chemical weapons related and chemical industry sites. Besides the inequalities caused by the lack of a chemical industry declaration from the USA and the consequent limitations imposed on the conduct of inspections, the chemical industry appeared to have few complaints with the inspection regime. One concern which was expressed related to the inspectors' examination of facility records. All inspectors had been well trained in quantitative measures such as checking records and sometimes facilities had not been adequately prepared. This has not proved to be a problem in Schedule 2 facilities where the records are generally well-kept. However, inspections of Schedule 3 and other chemical production facilities are designed to be more qualitative and records are not always so accurate. The distribution of industry inspections was also discussed with attention focused on the apparent imbalance between Schedule 1 inspections and the rest. It was noted that while Schedule 1 inspections are at the intended intensity, the intensity of other industry inspections has been affected by the budgetary restrictions imposed in the light of the absence of the USA's industry declaration. Rather than being determined by guidelines issued by the Technical Secretariat, the intensity of industry inspections has now become a political matter, discussed within the Executive Council.

UNSCOM

The workshop next heard two presentations on the activities of the UN Special Commission on Iraq (UNSCOM). The first presentation dealt with the activities of UNSCOM in Iraq, until its withdrawal in December 1998. UNSCOM's investigations had demonstrated that Iraq had an interest in over 30 biological agents, of which several were under development as weapons. In 1998 a number of technical evaluation meetings (TEMs) involving independent experts were held and each one came to the conclusion that UNSCOM's technical findings were valid. In late 1998 Iraq demanded a comprehensive review which would have covered similar ground to that already dealt with by the TEMs and would have therefore been unlikely to offer any new information. The second presentation dealt with the political aspects of UNSCOM-Iraq

relations and events in New York. The workshop heard how 1998 not only saw the biggest conflicts between UNSCOM and Iraq, but also saw disagreements between and within various governments. It also saw both the biggest successes and the biggest failures of the regime. The negotiation of a memorandum of understanding in early 1998 set up a dynamic of regime change by signalling to the Iraqi government that elements of SCR 687 were negotiable. Following the MoU no surprise inspections were launched until the middle of the year as Richard Butler was unsure of support from the Security Council. Following the withdrawal of UNSCOM and the bombing campaign by the USA and UK in December 1998 the Security Council has been considering the situation. The Security Council panel which met in early 1999 brought in new experts to consider UNSCOM's work, and yet again they endorsed UNSCOM's conclusions, the third such independent review to do so in two years.

As at the previous workshop in May, it was stressed that UNSCOM's role was only to detect non-compliance and report to the Security Council. It was up to the Security Council to enforce SCR 687 and to deter non-compliance. It was pointed out that it is relatively easy to design a mechanism for discovering non-compliance and that UNSCOM had been extremely successful in that respect. However, detecting non-compliance is one thing, doing something about it is another. There are always likely to be diplomatic, political and economic factors to be taken into consideration. Until 1997 the Security Council was united in its support for UNSCOM, but after that time the divisions grew. Although the OPCW and a future BWC organisation are based upon consensus and cooperation, they could encounter similar problems if ever faced by non-compliance. Firstly, there is the question of whether non-compliance would be reported to the organisations' decision-making bodies and secondly the question of the international community's ability to deal with the problem once it became known. Some workshop participants questioned whether the situation would change until state sovereignty assumes a less important role in international relations. However, others focused on the role which new developments - especially NGOs and the internet - could play, with the international campaign to ban anti-personnel landmines serving as an example.

HSP international criminal law initiative

The workshop received an update on the initiative launched by the Harvard Sussex Program for the international criminalisation of CBW. The HSP draft convention was published in the December 1998 issue of the CBW Conventions Bulletin. The convention would make it a crime under international law for any person, regardless of citizenship or official position, to order, direct, or knowingly to render substantial assistance in the development, production, acquisition, stockpiling, retention, transfer or use of biological or chemical weapons or to threaten the use of such weapons or to create or retain facilities intended for the production of such weapons..Any person who knowingly commits any of the prohibited acts anywhere would face the risk of apprehension, prosecution and punishment should that person be found in a state that supports the proposed convention. The HSP draft convention is based on recent international conventions now in force that create such universal jurisdiction for the crimes of aircraft hijacking, torture, hostage taking, theft of nuclear materials, and harming internationally protected persons. Recent developments in the practice of international criminal law, such as the detention of Augusto Pinochet by the UK, demonstrate that persons who commit international crimes, even when heads of state, are not immune from prosecution. The authors of the draft convention have held discussions with several governments with the objective of having it referred to the UN Sixth (legal) Committee for negotiation and eventual signature and ratification by states.

The BWC Protocol: Entering the Endgame?

Moving into its main agenda item the workshop first considered the verification concept behind the protocol, then moved on to look in detail at a number of key provisions and finally considered ways to achieve consensus within the negotiations and to encourage the universality of the protocol once it is completed.

Scope and architecture of the Protocol

Workshop participants first heard a brief presentation on the concept of an architecture for the verification protocol based on an article by Douglas MacEachin in the March 1998 issue of the CBW Conventions Bulletin. The main goal of the protocol is to dissuade governments from considering the option of biological weapons by making the risks of discovery as high as possible. Those governments which choose not to join have already singled themselves out for suspicion. However, other governments may join the protocol and still be intent on establishing a biological weapons programme. Such actions can be countered by an effective verification architecture based upon both routine visits and challenge investigations. Any government which decides to hide a biological weapons programme within its legitimate industry will have to accept the risk that random inspections of declared facilities could turn up evidence of non-compliance. UNSCOM's experience demonstrates that while outright violations are rarely discovered, it is much more common for the concealment measures to give away the covert programme. If a government takes the alternative option and decides to base its programme in undeclared facilities it would require absolute secrecy and would have to run the risk of detection by the reconnaissance platforms or other intelligence capabilities of member states. In such a situation a state party could request a challenge investigation of the suspect facility. For these reasons it is essential that the protocol is based upon random visits to facilities that are declared and challenge investigations of facilities regarding which there are legitimate grounds for suspicion. Without both of these elements the whole protocol would be undermined.

Detailed measures

Moving into consideration of the detailed measures envisaged by the protocol the workshop turned first to visits, one of the areas of the most intense negotiation within the AHG. The current version of the protocol has provisions for three categories of visits: randomly-selected; clarification; and voluntary. The workshop was told that visits are an important element between declarations and investigations and have most value when considered as a mutually reinforcing package. The concept behind visits involves states parties making a commitment to be open about their declared facilities. With the issuing of a NAM (non-aligned members) paper supportive of a package of visits during the current session most delegations within the AHG now support the general concept of visits. Questions still remain however, both with regard to intrusiveness- some delegations would like to see visits on as voluntary a basis as possible while others favor managed access procedures more akin to those employed during routine inspections under the CWC-- and with regard to what types of facilities are to be subject to visits. Reflecting the wheeling and dealing which will accompany the endgame of the negotiations, it was pointed out that to reach consensus for the paper, many NAM countries had demonstrated flexibility which they now expected to be matched by other delegations on issues such as international cooperation. Many workshop participants expressed the view that a protocol without on-site visits would be pointless and it would not be worth burdening industry with declaration requirements if there was to be no provision for follow-up. It was

pointed out that the provisions for visits have been watered down with fewer visits, shorter duration and smaller teams of inspectors and that perhaps there is a limit below which visits will completely lose their value.

A number of issues relating to declarations and triggers are yet to be resolved, including just what types of facilities are to be declared (triggers), what information declarations should contain, and what information is to be submitted regarding national implementation and regulations. While some triggers are uncontroversial, such as the declaration of BL-4 facilities, it was pointed out that others, such as the declaration of BL-3 facilities, might be more problematic as such facilities are not always easily defined. The question of which vaccine plants should be declared has also not been resolved; whether to include human and animal vaccines, only licensed vaccines or to limit declarations to facilities producing vaccines against listed agents. There is also debate concerning triggers for biodefence facilities. With its growing biodefence programmes the USA is keen to narrow the declaration requirements for such facilities. Many of the other proposed triggers, such as work with listed agents, other production facilities and disease outbreaks, have not been extensively discussed within the AHG. Workshop participants also discussed the process for updating the lists of agents and toxins. It was noted that the simplified amendment procedure for changes to the CWC's schedules is still time-consuming and must be initiated by states parties. It was suggested that a more practical approach for the BWC protocol might be to imitate international environmental treaties which have standing review committees, allowing a dynamic to be created.

The workshop then considered concerns with the draft protocol which had been expressed by representatives of the biotechnology and pharmaceutical industry. Within the EU industry accepts many of the proposed declaration triggers and can also accept clarification visits and investigations. However, there is opposition to the concept of random transparency visits, particularly in the USA, and is predicated on fears about the protection of confidential business information. It was suggested that the differences between CWC inspections and the proposed BWC visits - no mass accounting, no sampling, short duration etc. - need to be further explained to industry. It appears likely that visits under the protocol would be similar to DOC (discrete organic chemical) inspections under the CWC, they would be qualitative rather than detailed quantitative checks. With respect to confidential business information industry's concerns are highest at the point of research and development whereas for arms control purposes most attention would be focused at the stage of production where industry's confidentiality concerns are often lower. Industry would have more concerns with the protection of confidential business information if the organisation had a non-career structure with a high turnover of inspectors. The workshop also discussed the incentives for industry to support the protocol. It was suggested that this problem might be tackled by emphasising the positive aspects of the protocol, for example the promotion of transparency in biotechnology instead of the prohibition of biological weapons. This could even be reflected in the name of the implementing organisation.

On the subject of national implementation the workshop was given an overview of Article X of the draft protocol. The fifteenth session of the AHG added more square brackets with the effect of undermining the entire article, according to some participants. Currently states parties to the protocol would only be required to implement the protocol nationally "where appropriate and necessary". In previous versions of the draft protocol this had been an obligation upon all states parties through the use of the word "shall". Additionally the obligation to enact penal legislation remains in square brackets despite being consistent with state sovereignty and the

development of the BWC through the review conferences. With a requirement to enact penal legislation included in the CWC, its omission from the protocol could create the impression that penal sanctions are not required for biological weapons. The obligation to establish or designate a national authority is also currently in square brackets, which some participants found surprising given the importance of national authorities in the implementation of the CWC. A number of governments are already preparing for the national implementation of the BWC protocol. In many cases BWC national authorities would be co-located with the CWC national authorities. It was suggested that the differences on Article X were ones of philosophy with some states parties keen to keep many provisions as discretionary as possible to avoid being overloaded with mandatory obligations. Some participants argued that the obligation for national implementation was essential as states parties would otherwise have to rely on very general laws. For example, if Japan had implemented the CWC nationally it could have taken action against Aum Shinrikyo before the Tokyo subway attack in 1995. *Achieving consensus and universality*

The workshop next discussed both positive and negative incentives for states parties to join the protocol focusing in particular on the provisions for scientific and technological exchange for peaceful purposes and technical cooperation included in Article VII. This article remains one of the most politically sensitive in the negotiations. The provisions of Article VII can be divided between so-called promotional measures and regulatory measures. On the side of promotional provisions the AHG is concentrating on specific measures to encourage the peaceful uses of biotechnology. The workshop heard a presentation on such measures which included criteria for cooperative activities, institutional arrangements and declaration requirements. It was suggested that cooperative activities should not be carried out through the Technical Secretariat to differentiate them from the arms control benefits of the protocol and to facilitate cooperation with other international organisations. The draft protocol currently includes provision for the establishment of a cooperation committee intended to review and report on the implementation of Article VII. The presentation also proposed that all states parties should submit annual declarations on activities related to Article VII and that the obligation to submit such declarations should be included in Article III of the protocol alongside all the other declaration requirements. In this way it will be emphasised that Article VII declarations are also declarations of compliance and therefore mandatory. It was recognised that a great deal of progress has been made with regard to the promotional aspects of Article VII as it is clear that the specific measures will be more substantial than those provided for by Article XI of the CWC.

Less progress has been made in relation to the regulatory aspects of Article VII. It was noted that this issue cannot be dealt with in isolation from discussions on Article III of the BWC which deals with the non-transfer of the agents, toxins, weapons and equipment listed in Article I. Any final compromise on Article VII will also have to incorporate measures dealing with Article III of the BWC. Some participants expressed pessimism as to whether any middle ground could be found on Article III issues but also stated that the co-existence of ad hoc regimes such as the Australia Group alongside a protocol regime incorporating Article III measures would exacerbate existing problems. However, it appears that members of the Australia Group are committed to maintaining the ad hoc arrangement. On a related issue it was noted that the CWC provides for the graduated restriction of trade in scheduled chemicals with non-states parties. Trade in Schedule 1 chemicals was prohibited upon entry into force in 1997, trade in Schedule 2 chemicals will be prohibited from 29 April 2000 and trade in Schedule 3 chemicals could be prohibited from 29 April 2002. These graduated restrictions can be seen as negative incentives for states non-party to join the CWC or else suffer from

potentially severe trade restrictions. Currently the draft protocol contains no such negative incentives for encouraging universality. It was therefore suggested that, except for urgent humanitarian reasons, almost all dual-use biological goods be prohibited from transfer to non-states parties to the protocol and that for states within the protocol regime dual-use goods be categorised into those which can be transferred freely and those which can be transferred with discretion.

The workshop concluded its main business with a discussion of the global common interest. It first heard two presentations on the role of NGOs in encouraging the universality and implementation of the protocol. The first presentation considered ways in which to increase the involvement of NGOs in the AHG negotiations. Similarly to other arms control negotiations NGO involvement in the AHG to date has been at a rather technical level and conducted primarily by what one participant referred to as “white-collar” NGOs. Little attention has been paid to agenda-setting or public awareness-raising activities. It was debated whether such activities would actually be of benefit to the negotiations as they enter their endgame. While some thought such involvement ran the risk of polarising or trivialising debate, others believed that public pressure could play a role in pushing governments to conclude an effective protocol. The presentation concluded that NGOs should continue and further develop their current involvement in the AHG, perhaps by providing analysis on politically controversial issues such as export controls and technical cooperation and visits. Additionally, NGOs need to start preparing now for the vital role which they will play in encouraging the universality of the protocol once it is opened for signature. The second presentation touched on similar issues, this time in respect to the role of the American public in the AHG negotiations. Since the end of the Cold War public interest in international affairs in the USA has been in decline and some questioned the ability of NGOs to reverse this trend. The presentation argued that the current US negotiating position within the AHG is based upon perceptions of what kind of a protocol will be acceptable to industry and to Congress. It was argued that a better educated public could play a role in influencing the positions of both the industry and of their legislators. In this light the British American Security Information Council (BASIC) has begun an outreach programme aimed at three main audiences: Congress and the general public; the medical and scientific community; and the arms control community. Similarly in the UK the International Security Information Service (ISIS) has prepared a press briefing pack on the draft protocol.

The discussion of the global common interest concluded with a frank discussion of the general international political climate in which the AHG negotiations are taking place. It was accepted that the protocol was not being negotiated in a vacuum and that as the endgame drew nearer external political developments would inevitably play a greater role. Participants recognised the potential dangers posed to the human race by biological weapons and many considered the BWC protocol to be a most appropriate international response to this threat. However, it was recognised that not all countries seemed to share the same faith in multilateral instruments and that this was of particular concern when apparent in the policies of major states.

The workshop will hold its thirteenth meeting in April 2000 in The Netherlands.

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WORKING/DISCUSSION PAPERS

WHO Contribution to Global Surveillance of Microbial Threats, by Ottorino Cosivi (Italy/WHO)

The Role of the American Public in the Negotiations for the Biological Weapons Convention Protocol, by Julia Fu (USA)

A Strong Recommendation Not to Exclude “Organisms Other than Microorganisms” from the Definition of Biological Agents and from the Lists of Putative Biological Weapons Agents, by Erhard Geissler (Germany)

An “Endgame” in the Negotiation of the BWC Protocol ? Lessons from the Chemical Weapons Convention, by Bob Mathews (Australia)

NGOs and the BTWC Protocol: What kind of involvement?, Northern Autumn 1999, by Iris Hunger/Oliver Meier (Germany)

Physical Protection, the Chemical Weapon Convention and the Biological and Toxin Weapon Convention, by Jan Medema (The Netherlands)

The Problem of Biological Weapons, by Matthew Meselson (USA)

The BWC Protocol Enters the End-Game, by Graham S. Pearson (UK) [including transparencies]

Copies of transparencies on “Randomly Selected Visits”, “Declaration Clarification Procedures”, “Voluntary Visits”, “Declarations and Visits”, “Developments on Visits Sept 99”, by Graham Pearson (UK)

BACK/GROUND PAPERS / DOCUMENTS

Working Paper on BWC Protocol Article VII, FAS Working Group on BW Verification, September 1999 (distributed by Barbara Hatch Rosenberg)

CWC Update : “ Problems and Prospects of CWC Implementation after the Fourth Session of the Conference of States Parties ”, by Alexander Kelle, *Disarmament Diplomacy*, June 1999, pp. 12-16

The Efficacy of the Mechanisms for Assessing Allegations of Biological Weapons Use in the Biological and Toxin Weapons Convention (BTWC), and the Resurgence of False Allegations of BW Use in 1998-1999, by Milton Leitenberg (distributed by Barbara Hatch Rosenberg)

“A Draft Convention to Prohibit Biological and Chemical Weapons under International Criminal Law”, *The CBW Conventions Bulletin*, Issue no. 42, December 1998

“Routine and Challenge : Two Pillars of Verification”, by Douglas J. MacEachin (USA), *The CBW Conventions Bulletin*, Issue no. 39, March 1998

Review article in *The New England Journal of Medicine*, Volume 341, No. 11, September 9, 1999, of *Anthrax*, by Terry C. Dixon, B.S., Matthew Meselson, PhD; Jeanne Guillemin, PhD ; and Philip C. Hanna, PhD

“The Impact of Pugwash on the Debates over Chemical and Biological Weapons”, by J.P. Perry Robinson, in *Scientific Cooperation, State Conflict : The Roles of Scientists in Mitigating International Discord*, Vol. 866 of the *Annals of the New York Academy of Sciences*, December 30, 1998

OPCW Synthesis, Issue 4/1999, July-August 1999

“The challenge of biological and chemical weapons”, by Matthew Meselson, pp. 102-103, and “The efforts of WHO and Pugwash to eliminate chemical and biological weapons—a memoir”, by Martin M. Kaplan, pp. 149-155, in *Bulletin of the World Health Organization*, 1999, 77 (2)

Statement of the Pugwash Council, 14 September 1999, 49th Pugwash Conference on Science and World Affairs, Confronting the Challenges of the 21st Century, 77-13 September 1999, Rustenburg, South Africa