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EDITOR'S NOTE

The United Nations has long recognized the critical role of education in combating poverty, inequality, injustice and conflict. Every aspect of the UN's work is touched by education. United Nations Secretary-General Kofi Annan has gone as far to say that 'Education, is quite simply, peace-building by another name. ... Experience and learning are indeed crucial pillars of peace.' It should be no surprise that disarmament education has been part of the UN's work for over two decades—and yet few people are aware of the UN's efforts in this area.

The latest UN disarmament education initiative was agreed last November through General Assembly resolution 55/33 E, which established a Group of Governmental Experts on Disarmament Education. The resolution invites representatives of UN organizations with special competence in disarmament, education or both to participate in the Group's work. UNIDIR is extremely pleased to be taking part.

UNIDIR is convinced that education is one of the crucial 'missing pieces' of global security. This *Disarmament Forum* is dedicated to an exploration of previous education initiatives and potential future directions. We have taken a broad approach to this theme, looking at both peace education and disarmament education, formal education initiatives and non-formal ones. We have asked 'what sort of education' and 'for whom'. After a short comment by the Chairman of the Expert Group, Ambassador Miguel Marín Bosch, Bill Potter proposes a new agenda for disarmament and non-proliferation education. Edith Ballantyne and Felicity Hill look back on past UN disarmament education efforts and offer some lessons learned. A current global education campaign, that of the Hague Appeal for Peace, is outlined in Betty Reardon's contribution. Jean Pascal Zanders and Kurt Laforce describe the development of an innovative tool for education on chemical and biological weapons. Serge Franchoo, Arjun Makhijani and Arthur Petersen offer three different perspectives on engaging scientists in disarmament through education. Lastly, Ian Hill explores the topic of education more broadly through examination of the International Baccalaureate Organization's curriculum, notably its emphasis on respect and ethics. I extend my heartfelt thanks to Colin Archer, Michael Cassandra and Bill Potter for their help in conceptualizing and planning this issue.

This publication will hopefully be only the first of several activities to be undertaken by UNIDIR on education for disarmament. Starting with this issue of *Disarmament Forum* and through our participation in the Group of Governmental Experts, we will be trying to identify where UNIDIR, as a UN research institute, could best serve as an interface between international organizations and the research community for the promotion of education for disarmament, as well as co-ordinate with other international organizations, governmental initiatives, and non-governmental and civil society projects.

The next issue of *Disarmament Forum* will address the implications of the Revolution in Military Affairs (RMA) on arms control and disarmament. The fact that technological evolution permits a constantly changing array of possibilities for new weapons systems is well documented. Yet most information on this subject is written from a scientific, industrial or military strategic perspective. Nearly the entire debate to date has covered the implications of RMA for the current and future battlefield. By contrast, what UNIDIR intends to approach with this issue of *Disarmament Forum* are the consequences of RMA in a political rather than a military or scientific context—the central question to be addressed is: what are the implications of RMA for arms control, non-proliferation and disarmament?

UNIDIR is pleased to announce the continuation of our work on tactical nuclear weapons (TNWs). Ten years ago Presidents Michail Gorbachev and George Bush issued directives to begin one of the deepest and most comprehensive programmes of nuclear weapons reduction the world had ever seen. These reciprocal unilateral declarations represent the only regime covering TNWs. The 1991 regime does not have common guidelines on implementation or provisions on verification—elements normally associated with nuclear weapons reductions—and therefore this important and unique regime is highly vulnerable to political change.

UNIDIR, the Center for Nonproliferation Studies in Monterey and the Peace Research Institute Frankfurt are taking the opportunity of the tenth anniversary of the 1991 declarations to focus attention on addressing TNWs in the European context and on strengthening the TNW regime. We shall hold a seminar entitled *Time To Control Tactical Nuclear Weapons* at the United Nations in New York on 24 September 2001. See page 76 for contact information and details.

The regional focus of UNIDIR's Visiting Research Fellowship programme for 2002 will be the Middle East. Four researchers from the region will be invited to UNIDIR for a six-month period, scheduled to begin in January. The researchers will work co-operatively on a single research paper focused on regional security. Interested potential applicants will find further information on UNIDIR's web site. Closing date for applications is 14 September 2001.

Were you affiliated with UNIDIR as a researcher, staff member, fellow or intern? We want to know what you are doing and get back in touch! Please send an e-mail with your name, mailing address, your relationship with the Institute and the dates you worked with us to abletry@unog.ch.

On a final note, the renovation of UNIDIR's web site is well underway. In the next few months you will see major improvements in our cyber presence. We are looking forward to your feedback.

Kerstin Vignard

SPECIAL COMMENT

Last November, in General Assembly resolution 55/33 E, the United Nations General Assembly requested the Secretary-General to prepare, with the assistance of a group of governmental experts, a study on disarmament and non-proliferation education. In so doing, the General Assembly stressed both 'the urgency of promoting concerted international efforts at disarmament and non-proliferation' and 'the need, more than a decade after the end of the cold war and at the start of the twenty-first century, to combat the negative effects of cultures of violence and complacency in the face of the current dangers in this field through long-term programmes of education and training'.

This is not the first time the United Nations system has raised the issue of disarmament and non-proliferation education.

In 1978, the Final Document of the Tenth Special Session of the United Nations General Assembly, the first devoted to disarmament (known as SSOD I), called on governments and international organizations to develop programmes on peace and disarmament education at all levels. Two years later, the United Nations Educational, Scientific and Cultural Organization (UNESCO) convened the World Congress on Disarmament Education, and its conclusions were later endorsed by meetings of education ministers from different regions.

The United Nations World Disarmament Campaign was launched during the Second Special Session on Disarmament (SSOD II) in 1982. The Campaign's goals were to inform, educate and generate understanding and support for the UN's objectives in arms control and disarmament. The Campaign lasted until 1992, when through resolution 47/53 D it was transformed into the Disarmament Information Programme.

The United Nations General Assembly adopted resolution 44/123 entitled 'Education for Disarmament' in 1989, which invited Member States and international governmental and non-governmental organizations to inform the Secretary-General of their efforts to develop programmes on peace and disarmament education at all levels. In 1991 and 1993, the General Assembly adopted resolutions 46/27 and 48/64, entitled 'Education and Information for Disarmament', which reiterated the importance of education, advisory and training programmes, and the objectives of the World Disarmament Campaign, as well as encouraged a 'redoubling of efforts' by governments and NGOs.

UNESCO and some NGOs continued their efforts and, in 1998, the World Conference on Higher Education addressed the issue of disarmament education as one of the central items of its agenda.

Despite these attempts to focus the international community's attention on disarmament and non-proliferation education for over twenty years, there have been few signs of true progress. We live in a very different world than that of 1978, and new educational initiatives may be warranted.

The first meeting of the Group of Governmental Experts established by resolution 55/33 E was held in New York in April; the second meeting is to take place in August. The ten-member Expert Group will submit its report to the General Assembly at its fifty-seventh session next year.

The fact that this *Disarmament Forum* is focused on issues related to education for disarmament, non-proliferation and peace raises hopes that the international community will now give this subject the attention it merits. We look forward to the contributions from governments, the United Nations system, university educators, disarmament and peace-related institutes and NGOs.

Ambassador Miguel Marín Bosch

Chairman of the Group of Governmental Experts

and Member of the Secretary-General's Advisory Board on Disarmament Matters

A new agenda for disarmament and non-proliferation education

William C. POTTER

United Nations Secretary-General Kofi Annan has observed correctly that 'education is quite simply, peace-building by another name.'¹ And yet, despite periodic appeals, education remains an underutilized tool for promoting peace, disarmament and non-proliferation. In part because of a fixation on quick solutions to immediate crises, neither national governments nor international organizations invest adequately in long-term programmes of disarmament and non-proliferation training.

This shortcoming is accentuated at the start of the new millennium by the growth of two post-Cold War disarmament challenges—ignorance and complacency. These tendencies find expression in most national parliaments, which remain woefully uneducated about disarmament and non-proliferation issues and generally are unprepared to exercise the political will or to allocate the resources commensurate to the danger. Today, more often than not, parliamentarians and their constituents are preoccupied with pressing domestic issues, and display scant interest in international matters that are not directly related to economics. For many, this disposition is reinforced by the mistaken perception that with the end of the Cold War and the diminution of the traditional danger of superpower nuclear conflict, there are no longer any real nuclear dangers.

Also disturbing is the very limited awareness of disarmament and non-proliferation issues on the part of otherwise well-educated citizens. Although this low knowledge base is deplorable, it also is understandable given the general absence of opportunities for study of the subject. Few, if any, high schools have curricula that expose students to issues of disarmament or weapons proliferation and strategies for their control, and the possibility for university training is not much better. The very modest progress that has been made in the sphere of disarmament education at the university level is apparent in the July 1999 *Report of the International Association of University Presidents/United Nations Commission on Disarmament Education, Conflict Resolution and Peace*.² The picture is even more bleak in the realm of non-proliferation education where one can find only two universities in the world that offer a graduate concentration in the field.³ In short, at a time when there is a pressing need for new thinking about disarmament and non-proliferation matters, there are few venues available for training the next generation of specialists or even for introducing our future leaders to the subjects.

Dr William C. Potter is Institute Professor and Director of the Center for Nonproliferation Studies and the Center for Russian and Eurasian Studies at the Monterey Institute of International Studies. An earlier version of this article was prepared as a discussion paper for the January 2000 meeting of the United Nations Secretary-General's Advisory Board on Disarmament Matters.

What is the subject? Who is the audience?

‘Disarmament education’ means very different things to different audiences and may connote everything from campaigns to raise the general public’s awareness of broad disarmament challenges to formal programmes of advanced graduate study of weapons of mass destruction proliferation. As Betty Reardon points out in a very useful review of ‘peace education’ broadly defined, the field has often encompassed formal university courses of study on conflict resolution, world order, war prevention, multicultural studies, non-violence, nuclear education, and disarmament education.⁴ One could add a number of other related subjects or subfields to her list, including non-proliferation studies. These course offerings have links to many different disciplines and have embraced a variety of methodologies ranging from mathematical modelling to area studies. At different historical moments and in different regions, pedagogy also has varied in its emphasis on advocacy (i.e., education for disarmament and/or non-proliferation) and explanation (i.e., development of critical thinking about disarmament and non-proliferation issues).

As other contributors to this volume describe in detail, there is a substantial public education and outreach dimension to peace and disarmament pedagogy, which is as diffuse in its definition of the subject as that of its academic counterpart. Although differing widely in its focus from country to

Public education in the field of disarmament and non-proliferation has tended to emphasize advocacy over explanation.

country and regionally, public education, and especially mass peace campaigns, typically have focused less on the issue of horizontal spread of weapons of mass destruction and more on their vertical proliferation, namely the arms race among the extant nuclear-weapon states. The target audiences for such messages often are much broader than that for formal education, and may include the public-at-large or the so-called informed or attentive public. On occasion, however, public education efforts also may focus more narrowly on policy-makers in the legislative and executive branches of government. Not surprisingly, public education in the field of disarmament and non-proliferation has tended to emphasize advocacy over explanation.

It is not my intent to argue the merits of one or another definition of the field or the priority to attach to alternative target audiences. Because of my greater familiarity with the state of disarmament and non-proliferation education of an academic nature, however, this essay’s recommendations will focus on the more formal variety of education.

Education as a disarmament and non-proliferation strategy

Using education as a disarmament and non-proliferation strategy entails a combination of traditional and innovative teaching techniques to convey information, enhance analytical thinking and otherwise facilitate receptivity to new views about disarmament and non-proliferation. Different pedagogical approaches include face-to-face classroom lectures, small group discussion and research seminars, as well as simulations in which students assume the roles of ‘real world’ policy-makers and negotiators. New information and communication technologies also need to be exploited for the purpose of expanding disarmament and non-proliferation education.

What follows is a preliminary and partial list of recommendations for enhancing the role of disarmament and non-proliferation education. The specific recommendations draw upon both

traditional and more contemporary pedagogical approaches. They also suggest the need for a number of changes of a legislative and administrative nature.

FACILITATE ACCESS TO INFORMATION ON DISARMAMENT AND NON-PROLIFERATION EDUCATION

A multitude of United Nations bodies, NGOs, and private and public institutions of higher education are engaged in various forms of disarmament and non-proliferation education. No current and readily accessible compilation of information on the subject, however, exists. The United Nations Institute for Disarmament Research (UNIDIR) or the United Nations Department for Disarmament Affairs (DDA), perhaps in collaboration with a NGO, might usefully compile such a compendium. Ideally, it would be available online and would be updated periodically.

CREATE AN ONLINE, MULTILINGUAL DISARMAMENT AND NON-PROLIFERATION INFORMATION CLEARINGHOUSE

The provision of disarmament and non-proliferation education for both an academic audience and the general public would be facilitated by the creation of a 'one-stop information service' or clearinghouse. A model for such an online service for disarmament and non-proliferation information is the International Relations and Security Network (ISN), a co-operative project of the Swiss government and the Zurich-based Center for Security Studies and Conflict Research. Among the services offered by ISN that would be useful to emulate in an online disarmament and non-proliferation clearinghouse are an annotated links library, a search tool, a selection of resources on world affairs, specialized fact databases, and education modules in the field of security policy and international relations. Provision of factual information in multiple languages would be particularly valuable in many regions currently lacking access to timely information on disarmament and non-proliferation topics.

DEVELOP AND DISSEMINATE CURRICULUM MATERIALS FOR HIGH SCHOOLS

Disarmament and non-proliferation issues rarely are part of high school curricula. Two important reasons for this shortcoming are the paucity of relevant curriculum modules and the lack of familiarity with disarmament and non-proliferation issues by potential instructors. The United Nations DDA and/or the Department of Public Information, in partnership with one or more NGOs, should develop modules on disarmament and non-proliferation for high school use. Among academic organizations which could be of assistance to the United Nations in this regard are the Academic Council on the United Nations System, the International Association of University Presidents Commission on Disarmament Education, Conflict Resolution and Peace, and the Stanford Program on International and Cross-Cultural Education. In addition, a multinational programme of training seminars for selected high school instructors should be organized. The Center for Nonproliferation Studies at the Monterey Institute of International Studies has experience in this regard with respect to non-proliferation issues and has initiated a high school outreach project to provide curricula and instructional materials on WMD non-proliferation to secondary schools and to train teachers in the use of these materials. Currently it offers week-long training sessions involving student-teacher teams from over a dozen high schools in five states of the United States and four Russian nuclear cities.

FOSTER PARTICIPATORY LEARNING

One of the most important principles highlighted in the prescient *Final Document* of the 1980 World Congress on Disarmament Education is the need to utilize ‘the most imaginative education methods, particularly those of participatory learning ...’.⁵ As the *Final Document* notes, this approach to education is problem-oriented and ‘aims at teaching *how* to think about disarmament rather than *what* to think about it.’

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My experience in nearly three decades of university teaching is that by far the most effective means to encourage participatory learning is through the use of simulation exercises in which students adopt the roles of different national representatives and policy-makers. I am always amazed, for example, at the ease and speed with which American students adopt credible Russian perspectives in a semester-long simulation of American-Russian START III negotiations, and the similar facility displayed by Russian, Chinese and other international students in portraying negotiators from the United States. More often than not, the simulation participants experience the mind-expanding process in which they begin to see the world through the eyes of others. Perhaps what is needed is for ‘real world’ foreign and defence policy-makers periodically also to have the opportunity to switch roles in a simulation context and, at least for a short period of time, view the problems of international peace and security from the vantage point of an adversary or reluctant ally. Given the lack of recent activity in the Conference on Disarmament, it might be the ideal venue for such a simulation to take place.

ESTABLISH AN INTERNATIONAL FUND FOR GRADUATE TRAINING

A tremendous gap exists between government statements about the dangers of weapons of mass destruction and the paucity of national funds allocated to train the next generation of specialists on disarmament and non-proliferation. One useful step that could be taken to remedy this situation in the United States would be passage of legislation to create a National Non-proliferation Education Act. Such legislation, perhaps modelled after the National Defense Education Act, would provide fellowships to American and foreign graduate students for advanced training in the field. Although it might be desirable to fund similar legislation with a broader disarmament education mandate, it would appear to be infeasible at the moment given the current orientation of the United States Congress. Other national legislatures, however, might be more receptive to the concept. Alternatively, a private organization or foundation could accomplish the same objective by establishing a scholarship fund. Interest from a US\$10 million fund, for example, could support the training of several dozen new professionals each year.

EXPAND ON-THE-JOB TRAINING

An important educational supplement to formal classroom training is on-the-job training, which may take place at research centres on a campus or at international organizations, national governmental agencies or NGOs. Such training, under the mentorship of an experienced professional, will vary widely depending upon the organization in question, and may include such tasks as background research, data collection and analysis, development of course materials, reporting on conferences

and interagency meetings, and performance of routine office activities. What all meaningful on-the-job training programmes have in common is provision of opportunities for students/interns to apply their classroom knowledge to practical problems and to acquire 'real-world' experience of interest to prospective employers. At the Monterey Institute of International Studies, for example, each year typically fifty graduate students spend fifteen to twenty hours per week on different non-proliferation projects under the supervision of a senior staff member from the Center for Nonproliferation Studies. Approximately ten of these students annually also are selected for six- to nine-month paid internships at major international organizations with non-proliferation responsibilities (e.g., the International Atomic Energy Agency, the Organisation for the Prohibition of Chemical Weapons, DDA, the Conference on Disarmament, and the Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean) and with the United States Department of Defense's Cooperative Threat Reduction Program. Upon completion of these internships, the individuals are exceptionally marketable and are well positioned to make the transition from graduate student to young professionals in the non-proliferation field.

UTILIZE NEW TECHNOLOGIES TO PROVIDE DISTANCE LEARNING

A tremendous opportunity is available to utilize new information and communication technologies for disarmament and non-proliferation distance learning, including the development and dissemination globally of real-time, interactive courses, short course modules, and related course materials tailored to different age groups. Although distance learning should not be thought of as a substitute for in-classroom training, it allows access to new audiences and non-traditional students. New Internet technology and tools, including electronic mail (e-mail), e-mail listservs, chat groups, desktop video conferencing, and the World Wide Web provide nearly instantaneous access to vast archives of information, as well as a variety of Internet-mediated learning activities. These tools can be utilized for both highly interactive education activities (e.g., online courses with desktop video conferencing) or more modest and lower interactive pedagogy (e.g., posting lists of Internet resources for a specific course).

The United Nations has a responsibility to join the technological revolution and to exploit it for pedagogical purposes.

The United Nations has a responsibility to join the technological revolution and to exploit it for pedagogical purposes. Greater efforts should be made to tap the enormous financial resources of private entrepreneurs in information and communications technology to support disarmament and non-proliferation distance learning activities under the auspices of DDA, UNIDIR or conceivably other United Nations entities.

BUILD GLOBAL COMMUNITIES OF DISARMAMENT AND NON-PROLIFERATION SPECIALISTS

Development of a global disarmament and non-proliferation culture cannot be accomplished easily or quickly. Nor will an influx of money alone solve the problem. What is required is a sustained educational effort as part of a broader strategy to build communities of independent disarmament and non-proliferation specialists. This strategy has governmental, international organizational and non-governmental components and requires for its success a partnership among representatives from each of these communities in pursuit of certain common objectives.

Effective community-building must be sustained over an extended period of time, a task that often is difficult for governments or international organizations to accomplish. It is particularly important

for trainers not to introduce their charges to new careers and then leave them stranded with little prospect of meaningful long-term employment in the disarmament and non-proliferation field. One of the best means to reduce the likelihood of this outcome is to build local communities of specialists who, by virtue of their critical mass, can better maintain activities without permanent foreign assistance. Nevertheless, a fundamental obstacle to community-building in many countries remains the difficulty of attracting young people to the field when there are at best dim employment opportunities. The long-term solution to this dilemma, which will require a significant shift in the attitudes of both educators and national policy-makers, is, as Colin Archer points out, 'to situate disarmament more fully as a legitimate and indeed essential element within programmes of study in international relations, politics, and training for life in the diplomatic community'.⁶

TRAIN THE TRAINERS

A useful means to build communities of disarmament and non-proliferation specialists is to train the trainers. This approach recognizes the significant multiplier effect that can be achieved by targeting professors/teachers for disarmament and non-proliferation training. Once trained, these individuals can introduce the subject to a much larger audience through their courses.

Illustrative of this training approach, and one that could usefully be applied to many other regions is the 'Train the Trainers' project developed by the East Asia Nonproliferation Program at the Center for Nonproliferation Studies. This project engages Chinese professors from over one dozen different universities and institutes in a two-week workshop to familiarize them with a Chinese language non-proliferation and arms control 'course-in-a-box'. Participants also are provided with additional teaching materials in Chinese and English that can be used to develop new courses or incorporated as non-proliferation modules in existing courses. Workshop alumni subsequently receive updated material, electronic mailing lists, and on-site visits from Center staff that combine substantive presentations with evaluations and recommendations for course improvements. By training the trainers, the project reaches well beyond the current, government-based non-proliferation community in China and helps to develop the next generation of non-proliferation specialists in that region.

IMPROVE LIAISON AMONG RELEVANT UNITED NATIONS BODIES

The issue of disarmament and non-proliferation education cuts across a number of different United Nations organizations, departments and programmes including UNESCO, UNIDIR, DDA, the Department of Public Information, the United Nations University, the University for Peace and the Disarmament Fellowship Programme. These different United Nations bodies and programmes, in turn, maintain relationships with a variety of educational institutions and NGOs in the disarmament field. However, there is insufficient routine consultation and co-ordination among the different United Nations entities with regard to disarmament and

There is insufficient routine consultation and co-ordination among the different United Nations entities with regard to disarmament and non-proliferation education.

non-proliferation education. Co-ordination among these bodies might be improved if each had a staff member designated as responsible for the subject and if the representatives met periodically as an interdepartmental or interagency working group.⁷

Policy action

At last year's fifty-fifth session of the First Committee, the General Assembly adopted a resolution sponsored by Mexico and eleven other nations to conduct a two-year United Nations study on disarmament and non-proliferation education. More specifically, that resolution requests the Secretary-General, with the assistance of a group of qualified experts:⁸

- (a) To define contemporary disarmament and non-proliferation education and training, taking into account the need to promote a culture of non-violence and peace;
- (b) To assess the current situation of disarmament and non-proliferation education and training at the primary, secondary, university and postgraduate levels of education, in all regions of the world;
- (c) To recommend ways to promote education and training in disarmament and non-proliferation at all levels of formal and informal education, in particular the training of educators, parliamentarians, municipal leaders, military officers and government officials;
- (d) To examine ways to utilize more fully evolving pedagogic methods, particularly the revolution in information and communications technology, including distance learning, to enhance efforts in disarmament education and training at all levels, in the developed and the developing world;
- (e) To recommend ways in which organizations of the United Nations system with special competence in disarmament or education or both can harmonize and coordinate their efforts in disarmament and non-proliferation education;
- (f) To devise ways to introduce disarmament and non-proliferation education into post-conflict situations as a contribution to peace-building

Pursuant to the resolution, a ten-nation group of experts has been designated by the Secretary-General, and the first meeting of the Experts Group was held in New York in April 2001.⁹ Mexican Foreign Ministry Under-Secretary Miguel Marín Bosch was selected to chair the expert body.

Given its mandate, the new United Nations study has the potential to raise the salience of the issue of disarmament and non-proliferation education and to generate a set of concrete, practical recommendations. The first meeting of the group was promising in this regard. It remains to be seen, however, whether or not the new proposals will resonate any more loudly in the international community than the excellent package of recommendations stemming from the 1980 World Congress on Disarmament Education. Regrettably, the absence from the Experts Group of the five nuclear-weapon states recognized by the NPT will make it harder to gain political support internationally to implement the group's recommendations. As a consequence, even more responsibility is likely to fall upon NGOs to move the disarmament and non-proliferation education process forward.

The new United Nations study has the potential to raise the salience of the issue of disarmament and non-proliferation education and to generate a set of concrete, practical recommendations.

In short, the challenge is great, as is the opportunity. As Secretary-General Annan has noted, 'education is the most effective form of defence spending ...'.¹⁰ Disarmament and non-proliferation education has the potential to yield a profit beyond calculation.

Notes

- 1 Quoted in 'Secretary-General in Address to "Learning Never Ends" Colloquium, Calls Education Investment Which Yields Highest Profit', press release SG/SM/7125, 10 September 1999, p. 2.
- 2 L. Eudora Pettigrew, *Report of the IAUP/United Nations Commission on Disarmament Education, Conflict Resolution and Peace, 1996–1999*, July 1999.
- 3 Although a number of universities offer one or several courses on non-proliferation, only the Monterey Institute of International Studies and the Moscow Engineering Physics Institute (MEPhI) provide a graduate concentration in the field. The Monterey programme offers a Masters Degree in International Policy Studies with a Certificate in Nonproliferation Studies. The MEPhI programme leads to a Masters Degree in Technical Physics with a specialization in Material Protection, Control and Accountancy.
- 4 See Betty A. Reardon, 'Peace Education: A Review and Projection,' in Bob Moon, Sally Brown and Miriam Ben Peretz, eds., *International Companion to Education*, New York, Routledge, 2000.
- 5 *Final Document of the World Congress on Disarmament Education*, UNESCO Headquarters, Paris, 13 June 1980, Report number SS-80, CONF. 401 REV/COL.51.
- 6 'NGO Committee Presentation on Disarmament Education', Remarks prepared for the Secretary-General's Advisory Board on Disarmament Matters, Geneva, 5 July 2000.
- 7 Colin Archer also cites the value of an interdepartmental working group within the United Nations system in 'NGO Committee Presentation on Disarmament Education', *ibid.*
- 8 United Nations, *United Nations Study on Disarmament and Non-Proliferation Education*, 55/33 E of 20 November 2000.
- 9 The nations invited to participate on the Experts Group are Egypt, Hungary, India, Japan, Mexico, New Zealand, Peru, Poland, Senegal and Sweden.
- 10 'Secretary-General in Address to "Learning Never Ends" Colloquium, Calls Education Investment Which Yields Highest Profit,' *op. cit.*, p. 2.

Lessons from past UN disarmament education efforts

Edith BALLANTYNE and Felicity HILL

As education is an important force in bringing about enlightened change, disarmament and non-proliferation education can be such a force to help our world move from militarism to a culture of peace—a goal of the United Nations. Therefore, disarmament activists around the world welcomed the UN General Assembly resolution of 20 November 2000 that established the Group of Governmental Experts on Disarmament and Non-Proliferation Education.

The group will produce a report with recommendations for governments, NGOs and the United Nations system on disarmament and non-proliferation education. As disarmament education efforts of the United Nations have a long history, it might be useful to cast a backward glance over the previous two decades of campaigns and activities. What lessons are there to be learned? What can this group do differently and with better results?

SSOD I & II

The UN General Assembly's Tenth Special Session (also known as the First Special Session on Disarmament or SSOD I) of 1978 represented the height of envisioning disarmament. Its *Final Document* eloquently registered the absurdity of the arms race and the radioactive security concept driving it, and made a number of references to disarmament information and education.¹

Paragraph 106 of the *Final Document* reads:

With a view to contributing to a greater understanding and awareness of the problems created by the armaments race and of the need for disarmament, Governments and governmental and non-governmental international organizations are urged to take steps to develop programmes of education for disarmament and peace studies at all levels.

This document introduced measures to increase the dissemination of information to mobilize world public opinion, and to encourage governmental and non-governmental information organs and those of the United Nations and its specialized agencies to give priority to the preparation and distribution of disarmament-focused printed and audio-visual materials.²

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The UNESCO World Congress on Disarmament Education was held less than two years later. It is disheartening that its *Final Document* is as insightful and valid today as it was twenty years ago—an ironic indicator of our (lack of) progress on this topic. In particular, its paragraph 4 on the relation of disarmament education to economics and political realities is highly relevant to the conflicts we face today.

Disarmament education cannot, however, confine itself to the dissemination of data and information on disarmament projects and prospects nor even to commenting on the hopes and ideals which inspire them. It should recognize fully the relationship disarmament has with achieving international security and realizing development. To be effective in this regard, disarmament education should be related to the lives and concerns of the learners and to the political realities within which disarmament is sought and should provide insights into the political, economic and social factors on which the security of peoples could be based.³

Our current discussions on human security are not perhaps as novel as we would like to think.

Following SSOD I, four years of study, consultations (including with NGO representatives) and negotiations resulted in the United Nations World Disarmament Campaign. The campaign was launched on 7 June 1982, the opening day of SSOD II. This campaign was a response to persistent calls by NGOs and non-nuclear-weapon states to halt the absurd and dangerous nuclear arms race, and the resulting legitimization of 'lesser' wars waged with conventional weapons. The campaign was also perhaps an attempt to address the inherently undemocratic nature of the national security policies adopted in the Cold War, wherein information about decisions taken in the name of 'we the people' was entirely unavailable to the populations directly affected or implicated.

The campaign had a receptive audience. NGO campaigns for disarmament were thriving at the popular level in all of the world's regions. For example, a signature campaign for nuclear disarmament launched by Japanese peace organizations became a worldwide campaign. It was, at its heart, an education campaign. It informed people on the street about the need for disarmament while soliciting their signatures for a petition addressed to the UN. More than a million signatures were collected and delivered to the UN during SSOD II.

SSOD II itself was popularly launched by a march of more than a million women, men and children from all over the world, starting at UN Headquarters and winding its way to Central Park, demanding 'Disarmament Now!' It took a good year to prepare that march, which in itself was an information and education campaign. It was the largest demonstration ever to be held on this issue. In other words, popular will, the perceived absence of which is so often lamented today, was receptive to the messages and products of the World Disarmament Campaign.

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World Disarmament Campaign 1982–1992

The framework for the World Disarmament Campaign was adopted by the General Assembly in 1982 and got underway in 1983. The campaign was designed 'to inform, educate and to generate public understanding and support for the objectives of the United Nations in the field of arms limitation and disarmament'. It envisaged the co-operation of the United Nations, its Member States and NGOs as major actors in achieving the campaign's objectives.

The campaign was divided into five major areas: preparation and dissemination of materials; conferences, seminars and training; special events such as Disarmament Week; a publicity programme; and the services of the United Nations Field Offices. Some of these elements are described here.

The *regional disarmament seminars* organized during the campaign brought UN experts and diplomats, regional governmental experts and non-governmental actors together to inform and educate, thereby increasing understanding and commitment to disarmament objectives. National disarmament activists and members of regional institutions as well as international NGO representatives participated as speakers and participants. Reports of the seminars were published by the UN and widely disseminated.

New *publications* and those already published by the UN Department for Disarmament Affairs, such as the *United Nations Disarmament Yearbook*, the Fact Sheet series and the periodic review *Disarmament*, were printed in larger numbers and distributed more widely. UN Radio increased their programmes on disarmament issues, and generally more audio and visual materials were made available for public use.

The *Disarmament Fellowship, Training and Advisory Services* was organized. This service incorporated the United Nations Disarmament Fellowship Programme that was launched in 1978 and which has trained more than 500 officials from over 150 countries. Additionally UN expert staff members responded positively to invitations to disarmament meetings organized by academia and NGOs.

UN resolutions on disarmament, the work of the Disarmament Commission and the Conference on Disarmament, the efforts by the UN Department for Disarmament Affairs—in short, all disarmament efforts by the UN and its Member States—were more highly profiled, and NGOs disseminated all available information. The World Disarmament Campaign stimulated a closer working relationship among its ‘major actors’—a significant achievement. However, the campaign slowly faded away and in its 1992 resolution 47/53 D entitled ‘World Disarmament Campaign’ the General Assembly decided that the ‘World Disarmament Campaign shall be known hereafter as the “United Nations Disarmament Information Programme”’. This change would ‘... lay the basis for broader support in the future’ and ‘more accurately describe the work being done.’⁴

Did the World Disarmament Campaign meet its educational objectives?

Opinions are mixed. Certainly the campaign produced useful information that was translated into local languages by the UN and by governments for their people, thereby introducing a wider public to disarmament issues. At the non-governmental level, the campaign no doubt provided a stimulus to work harder for disarmament, organize more seminars, conferences and other public events, issue more materials and disseminate them more widely, and enlarge the disarmament constituency.

Some critics accused the World Disarmament Campaign of being a delivery vehicle for Cold War propaganda. There were reported incidents of ‘booklet burning’ and publications never released because of objections from governments. Other commentators did not lament the loss too much, claiming that many of the booklets were boring and not read regardless.

At the time, many activists asked themselves whether certain governments seriously wanted to promote disarmament education, thereby strengthening popular support for policies that would contribute to world disarmament. This question was posed again each year when the General

Assembly noted that those '... States that have the largest military expenditures have not so far made any financial contribution to the World Disarmament Campaign.' Some governments invested considerably in disarmament information and education in their countries, others paid lip service to the campaign and continued their armament programmes, while still others simply ignored the campaign.

In the end, two major obstacles blocked the World Disarmament Campaign from becoming a truly mobilizing force.

One obstacle was that the campaign had to be carried out in a 'balanced, factual and objective' manner. What this actually meant was that nothing could ever be said or published that could in any way be understood as accusing a government of acting contrary to disarmament obligations and objectives. Anything that even gently criticized a specific country for an act or position that clearly went against the goal of achieving disarmament fell under the axe of 'lack of balance, fact and objectivity'. Clearly, this did not help identify where the obstacles to disarmament lay, enhance the credibility of the campaign, or make the exercise interesting. It is true, of course, that simple, factual information about the armaments race were and still are

Clarity and truth are precious ingredients of learning. Objectivity and balance are not violated by asserting facts.

compelling enough to make people want to push for disarmament. But it is nevertheless important that disarmament and what prevents it from happening be clearly and interestingly presented. Clarity and truth are precious ingredients of learning. Objectivity and balance are not violated by asserting facts.

Poor funding was the second obstacle to the campaign's success. Education is an investment in the future, and the case of education for disarmament is no exception. It is an investment in ensuring the future of humanity. For the most part, the World Disarmament Campaign was funded by voluntary contributions. Few governments contributed in a meaningful and ongoing way, and some made their contributions in non-convertible currencies so that the money had to be spent in the country of the contributing government or in blocs of countries where the currency was accepted.

Despite the fact that the annual General Assembly resolutions on the World Disarmament Campaign urged governments to contribute but not earmark funds, some countries reserved their contributions for particular conferences and events. The Department for Disarmament Affairs, the secretariat responsible for the campaign, was thereby deprived of the ability to allocate the already meagre resources where they were most needed.

Avoiding past mistakes

Based on these experiences, the recently established Group of Governmental Experts will almost certainly not recommend one overarching campaign effort, or endorse just one set of tools and techniques.

Instead, the process leading to the report to the General Assembly in 2002 should unearth, or point to the availability of, a range of learning modules and tools that could be used by educators, parliamentarians, municipal leaders, military officers and government officials. Rather than vague recommendations, all of the constituencies served by the resolution would benefit more from practical materials or basic elements that can be tailored to their particular needs. The panel can avoid being seen to endorse one model if it can stimulate the appearance of a wide range of disarmament education materials.

Rather than beginning something new, it would be both more likely and useful for the Expert Group to recommend the strengthening of existing initiatives. A lot more of what is already being done could make an enormous difference. For example, the United Nations CyberSchoolbus, the interactive, educational part of the UN's web site for children, needs more materials on disarmament. The United Nations Department of Public Information should be given more capacity to produce and disseminate disarmament-related materials, basic information, signs and posters in post-conflict zones, advertisements, videos and public relations events. The Department for Disarmament Affairs and UNIDIR should be encouraged and financially enabled to produce more occasional papers, studies and reports in collaboration with disarmament educators and NGOs. The Expert Group should acknowledge the work that has been done on disarmament by educators, such as Helena Kekkonen and others who have worked with UNESCO, in both formal and informal peace education.

Despite the recent push about the essential role of civil society and NGOs as partners of the UN, the capacity of NGOs in conceiving, producing, promoting, funding and especially disseminating UN publications on this matter has been severely underutilized. In order to reach new audiences and to more actively communicate with those already sympathetic to the issue, the United Nations should actively co-operate on more joint projects with NGOs.

UN Messengers for Peace and other celebrities could more consistently promote the issue of disarmament, which is often caught up in a technical and legalistic discourse. The current diplomatic exchange in Conference Room IV in New York or the *Salle des conseils* where the Conference on Disarmament meets in Geneva is not sufficiently interesting to sustain people who are less than obsessed about this issue. In order to engage the younger generation, the culture of peace needs to qualify as 'cool' and celebrities can help this issue acquire some 'grooviness' by association. The Group of Governmental Experts should engage this kind of star power assistance in launching their report and activities thereafter.

A great deal of confidence is felt both in the governmental and non-governmental communities in the openness and integrity of the Group's Chairman, Miguel Marín Bosch, and his colleagues. The ten experts, chosen by their respective governments, held their first meeting in New York in April 2001 and are preparing for the second meeting. The tone and outcome of the first meeting bodes very well for a creative, innovative and productive process leading to a renewed focus on disarmament and non-proliferation education.

Notes

- 1 *Final Document of the Tenth Special Session of the General Assembly*, UN document A/S-10/4.
- 2 *Ibid.*, paras. 99, 100.
- 3 *Final Document of the World Congress on Disarmament Education*, Paris, 9–13 June 1980, report number SS-80, CONF. 401 REV/COL.51. See also United Nations, Department for Disarmament Affairs, 1981, *Disarmament Yearbook*, vol. 5: 1980, p. 411.
- 4 United Nations, Department for Disarmament Affairs, 1992, *Disarmament Yearbook*, vol. 17: 1992, p. 285.

Tasks and directions for the Global Campaign for Peace Education

Betty A. REARDON in consultation with Alicia CABEZUDO

Since its recognition as a significant terrain in the field, disarmament education has continued to remain *terra incognita* on the map of peace education. It has been both forbidden and forbidding territory into which only a few courageous educators have ventured. Peace education here refers mainly to the field as it is practised in the elementary and secondary schools and in institutions educating those who will teach in them. Peace studies, that area of the field now included among the social sciences in some universities, particularly but not exclusively private universities, is a somewhat different case.

In private universities where there is less public scrutiny of curricula, many still enjoying authentic academic freedom, there has been more room for exploration. However, while not unknown to peace studies, here too disarmament education has been exotic, rarely visited territory. This is still the general case, even in the face of what has been accomplished by the United Nations/International Association of University Presidents Commission on Disarmament Education, Conflict Resolution and Peace, demonstrating that disarmament issues can be responsibly integrated into most undergraduate and graduate fields of study. In those institutions that are the exception to this xenophobic perspective, the programmes have been of such stellar quality as to overcome resistance, even in institutions with far from adventurous attitudes toward non-traditional offerings. It is clear from these efforts that disarmament provides curricular substance that meets the highest academic standards, and more importantly, offers students a learning experience essential to a crucial responsibility of citizenship in a global political order, taking informed positions on issues of peace and security.

The first staking out of the terrain of disarmament education arose from an initiative of UNESCO at the behest of a charge issued in the Final Document of the 1978 Special Session on Disarmament. It was the convening of the World Congress on Disarmament Education in 1980. Probably in recognition of the lack of familiarity with the concepts and issues of disarmament among educators, even peace educators, the document defined the substantive parameters of the field.

For the purpose of disarmament education, disarmament may be understood as any form of action aimed at limiting, controlling or reducing arms, including unilateral disarmament under effective international control. It may also be understood as a process aimed at transforming the current system of armed nation states into a new world order of planned unarmed peace in which war is no longer an instrument of national policy and peoples determine their own future and live in security based on justice and solidarity (Report and

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Final Document of the World Congress on Disarmament Education, UNESCO, Paris, 1980, section A, para. 2).

This paragraph is quoted in full here as the basis of the reflections and assertions to follow; first that the territory is no more forbidding than any other area of peace education, but rather that it was the acceptance of its being forbidden due to the historical circumstances of the time and the strategic and political developments which unfolded over the next few years, effectively declaring it 'off limits' or 'not in the national interest' in most countries where peace education was practised. (This is not to say that other forms of peace education have not also met with both scepticism and resistance.) With one brilliant but brief exception (the burgeoning of nuclear arms education in the spirit of the 1982 Second Special Session on Disarmament, and the surrounding fears of nuclear holocaust), the World Congress was more a closing than an opening of possibilities for disarmament education. Disarmament remained, with few exceptions, little more than an item on the list of topics included in peace education until the recent General Assembly resolution (55/33 E, November 2000) that has, through the current study, reopened the possibilities.

Disarmament, in those days, seemed forbidding to most elementary and secondary peace educators because they found the technical language and conceptualization of most aspects of the disarmament discourse beyond the possibility of comprehension by most ordinary citizens, much less by secondary school students, and certainly not by elementary school children. Yet, it is these very children who are now some of the citizens making judgements on security policies and, by acquiescence out of ignorance, give assent to one technological advance after another. Some who advocate disarmament education perceive this ignorance and consequent apathy to be a contributing factor to the technological spiral which has continued to increase the sophistication of weaponry over the two decades since those gathered at the World Congress asserted 'that it is urgent to take vigorous action in [disarmament education]' (Preamble of the Final Document, para. 2).

As peace educators, we have three reflections on this obstacle to disarmament education. First, insufficient attention was paid to the full substance of the *Final Document*, which placed disarmament

Insufficient attention was paid to the full substance of the Final Document, which placed disarmament education in a far broader context of peace education, specifying among other dimensions of the field, its relationship to human rights and development education.

education in a far broader context of peace education, specifying among other dimensions of the field, its relationship to human rights and development education. Those relationships still should comprise a significant component of the field, to be augmented by other dimensions such as environmental education and all the components of comprehensive peace education as it has evolved in the years since the World Congress. There were then adequate curricular routes to disarmament education, and there are even more now.

Second, clearly if there is any authentic intention to involve the citizenry in the discourse in a legitimate form of education and not just another political 'soap selling' campaign, then those with access to the substance of and data about disarmament need to find ways to make it more 'user friendly'. For without intelligent, responsible use of sound knowledge of the issues and problems, citizens can never be a constructive constituency for disarmament. We would argue that democratic process is as essential to viable progress in disarmament as authentic education is essential to democracy. To put it more directly, 'Without education for democratic discourse on disarmament, there can be no disarmament'.

Finally, there is a significant gender dimension to this obstacle, which is, as well, conceptual. A large percentage of elementary teachers and many secondary teachers are women, while disarmament like armed security is still pretty much the purview of men. Research on women's ways of knowing as well as studies of the language and conceptualization of weaponry show these forms of thinking

are of a type that men more than women are educated to practice. So the gap between those initiated into the discourse and the uninitiated replicates many of the aspects of the gender gap that exists in most policy areas related to peace and security. Working with educators and civil society is one way that the disarmament establishment can bridge that gap. Education and civil society are both 'equal opportunity' areas in the matter of gender.

We believe that a serious collaboration between disarmament experts and peace educators is essential to opening the learning roads to 'general and complete disarmament under effective international control'. As active advocates of the Hague Appeal for Peace and its call for the abolition of war, we see nothing less than general and complete disarmament as the ultimate goal of disarmament education. One of us having been introduced to this idea in her early years as a peace educator through the curricular use of the Clark-Sohn Plan for 'World Peace through World Law' and other such model proposals for a disarmed world, and both of us believing that the cultivation of the imagination is essential to an education for peace, we advocate education for the evaluation, even the design of proposals for disarmament as constituent to disarmament education. We agree that positive visions of a transformed 'world order of planned unarmed peace' can inspire educators and learners alike to struggle with the cognitive tasks of learning to disarm by learning about disarmament. One of the aims of the Hague Appeal for Peace Global Campaign for Peace Education¹ is to provide educators with curricular tools to cultivate such visions and to develop the critical capacities to evaluate proposals purporting to lead toward the transformation, among them proposals for disarmament.

Disarmament as curricular content for the Global Campaign for Peace Education

The Global Campaign for Peace Education was launched at the Hague Appeal for Peace Civil Society Conference held in the Netherlands in May 1999. The Conference, which attracted 10,000 participants from all world regions and a wide array of citizens movements for peace, human rights and global economic justice, adopted a set of fifty proposals directed toward achieving a culture of peace. The *Hague Agenda for Peace and Justice in the 21st Century* asserted that education was essential to the achievement of all the goals it set forth and called for 'education for peace, human rights and democracy' as the first of its fifty proposals.

The Campaign, affirming the purposes and approaches articulated in UNESCO's *Integrated Framework of Action on Education for Peace, Human Rights and Democracy*, seeks to assure the implementation of the framework adopted by the ministers of education of UNESCO member states at the General Conference in 1994. It also seeks to reaffirm the conclusions of the *Final Document* of the World Congress on Disarmament Education. These goals are pursued through programmes in teacher preparation, resource development and dissemination, and education of educational institutions and authorities to the urgent need for peace education to be integrated into the standard curricula of elementary and secondary schools throughout the world.

A major area of our work on the Global Campaign for Peace Education is placing disarmament at the very heart of the new phase of peace education the Campaign seeks to usher in. While we intend to use the foundation, even some of the pedagogy and materials devised by the early explorers in disarmament education, we are not going back to our roots so much as growing from our roots. Infusion of the substance of disarmament into the content of peace education is a top priority in the Campaign's work in curriculum development and teacher training. There are a number of curricular approaches currently being developed.

We are not going back to our roots so much as growing from our roots.

One is in the areas of what we refer to as the structures and institutions of peace calling for the development of the conceptual knowledge and critical thinking skills necessary to the comprehension and assessment of substantive issues of disarmament. Another relates to values and perceptions conducive to the development of a culture of peace, a primary goal of the *Hague Agenda for Peace*. These two areas are analogous to what earlier UNESCO documents referred to as education *about* disarmament and education *for* disarmament. A third addresses the relationship between disarmament, human security and a culture of peace as a means of integrating the cognitive and affective realms of disarmament education, and to cultivate creativity and a sense of political responsibility and efficacy among learners.

In this third area, we plan to use problems and issues of disarmament as the basis of an inquiry into the civic and political framework in which to develop a culture of peace, posing the hypothesis that achieving disarmament is the primary institutional requirement to develop a culture of peace and to establish the foundations for comprehensive human security. In the learning sequence we envision, consideration of this hypothesis will provide the core of an inquiry into possibilities for change and action for change. Such inquiries we see as essential to the requirements of civic education for a global society. Preparation for participation in global civil society has been a major concern of the Peace Education Program at Teachers College, Columbia University for a number of years. This effort is both analogous and complementary to the emphasis of the pedagogy of preparation for democracy employed by the Human Rights Chair of the University of Buenos Aires. We agree that disarmament education is uniquely suited to these pedagogic purposes and are pursuing it in the common endeavours we are sharing with other educators in the network of peace education centres the Campaign is building throughout the world.

The first two areas of the traditional approaches to education *about* and *for* disarmament are integral to the teaching manual, *Learning to Abolish War*, designed at the Peace Education Center at Teachers College, now being refined through a year of field use with the co-operation of other centres in the network and the team of graduate students who assisted us in the manual design. The manual uses the *Hague Agenda for Peace and Justice in the 21st Century* as a conceptual framework for teaching some of the main content and for training teachers in some of the most effective methods in peace education.

One of the main substantive dimensions of this resource is the disarmament strand of the *Agenda* and the specific recommendations it makes to achieve progress toward disarmament. These recommendations offer some specific current proposals that students can describe as indicators of cognitive understanding, research further so as to learn how to acquire information for making informed decisions on public issues, and assess as means to developing the critical skills necessary to making those decisions as constructive as possible. Informed decision-making and critical assessment are two of the most important capacities of democratic citizenship. Since most countries claim to educate for civic responsibility, we seek to make the case that most countries could achieve this educational goal through disarmament education.

The manual also outlines a basic inquiry into phases of the learning and the changes that might enable global civil society to make a significant contribution to achieving 'a new world order of planned, unarmed peace'. The inquiry would lead the students through a diagnosis of the problems inherent in a highly militarized international system, a critical assessment of alternatives, envisioning their own frameworks for a disarmed world (a technique long advocated by futurist peace researchers such as Elise Boulding), and planning coherent strategies for moving toward their vision through a series of practical steps such as those proposed in the *Hague Agenda*. These, of course, are all teaching techniques best suited to secondary education.

However, the manual takes a developmental approach to peace education, offering methods and materials suitable to all grade levels, that we also advocate for disarmament education.

A developmental approach to education for disarmament

We believe that peace education can be integrated into all subject areas at all grade levels. Indeed, given world circumstances we would argue that it not only could be, but it should be so integrated as a central purpose of education. The overarching goal of the Campaign is to work for the worldwide inclusion of peace education as a standard part of the curricula of all schools.

Since we would carry much of this argument into disarmament education we would advocate the same comprehensive and developmental approach. For elementary and middle schools, most of the emphasis is on education *for* disarmament, and laying the foundation for education *about* disarmament. We know that some of the techniques that focus on the substance of disarmament can be adapted in simpler forms to the middle grades, which could be a transition stage. But it should also be a stage in which the normative and perceptual aspects are firmly grounded.

The perceptual is very important; some would argue essential. If disarmament and peace are seen as possibilities, being seriously pursued by those such as the older students who are studying and designing proposals for a disarmed world, younger students will also approach these studies with a perception of disarmament as not only desirable but possible, worth working for, worth learning for. For many years peace education has used the presentation of non-violent alternatives to armed conflict, and cases in which peace has been achieved and maintained over long periods to demonstrate to learners that peace is possible. Now the task before us is to demonstrate that we can learn how to make it probable in our own time and in our own circumstances, or at the very least to take some practical steps in the direction of peace.

Cases of North America and Western Europe can be studied as 'disarmament among and between neighbours' as a prelude to study of regional agreements and proposals for disarmament. The various disarmament treaties, recast in form and language for curricular purposes, the backgrounds and issues involved in their negotiation, and their effectiveness could be introduced in secondary grades. Curricula for elementary grades already developed to teach children about contractual agreements could be adapted to use in disarmament education. The point is that students of all ages can learn that disarmament is possible, and that learning to help to achieve it is an important civic responsibility.

A second concern of the perceptual is how students see the world and those with whom they share it. Reasoned arguments as to how disarmament can advantage a particular nation or group or how armed conflicts and arms trade harms some more than others might be constructed by secondary students, demonstrating to whom and how disarmament might offer benefits. However, the development of a perception of the world that leads to seeing disarmament as a global good that could benefit all, and of a view of such global benefits as desirable, are normative tasks. These perceptions, too, must be subject to reasoned, as well as normative, assessment. Some of the values espoused in the United Nations normative documents, and those espoused in the various UNESCO policy documents such as the *Declaration on the Integrated Framework of Action on Education for Peace, Human Rights and Democracy* (1995) could be among the values brought to the assessment.

It can be demonstrated to students that co-operative, common security, involving a large measure of disarmament is in many respects more effective than competitive national security, but there must be a predisposition to believe that the security of others has value to even begin the

consideration of common security through disarmament. This predisposition is best developed at the elementary level in which the foundations of social values are laid.

Here the utility of the relationship of disarmament education to human rights and development education pointed out in the *Final Document* of the World Congress on Disarmament Education come into play. Peace education has long used concepts and standards of human rights as the indicators of the conditions of peace, what peace researchers refer to a 'positive peace'. So, too, peace educators have created lessons based on the argument in the Preamble to the *Universal Declaration of Human Rights* that, '... it is essential, if man is not to be compelled to have recourse, as a last resort, to rebellion against tyranny and oppression, that human rights should be protected by the rule of law'. Violation of human rights is a cause of armed conflict and protection of human rights is protection of peace. But a commitment to and understanding of human rights and their relationship to disarmament and peace must be cultivated if human rights are to serve their purpose. Disarmament is understood to be desirable because it contributes to the realization and protection of human rights.

This relationship as well as the relationship to development education (seeking to sensitize students to the extent and nature of world poverty) are both woven into the *Hague Agenda*, which calls for a transfer of military expenditures into the meeting of human needs and advocates the strengthening of international humanitarian and human rights law. While the text of the *Agenda* is

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not used in the curricula we recommend for elementary and middle grades, its spirit informs what we advocate for teaching for the achievement of the goals of the strands on human rights and on conflict transformation in which lessons on alternatives to violence and skills of conflict resolution are recommended.

The predisposition to respect the rights of others to peace and security, comprehension that there are alternatives to violence, and some fundamental competency in conflict resolution are all significant elements in education for disarmament. The Campaign's resource manual and teacher-training model include this foundational learning in a developmental, Kindergarten to Grade 12 approach to peace education that we conceptualize as a comprehensive field of learning.

A comprehensive concept of disarmament education

The *Final Document* of the World Congress on Disarmament Education speaks briefly of teaching methods, without examples such as those mentioned above, foreseeing possibilities for a wide-ranging pedagogy of disarmament education, adaptable, as is the Global Campaign's developmental approach to the wider field of peace education, to all grade levels and all subject areas ('Pedagogical Objectives', sec. A, para. 6). It also lists numerous topics and areas of substance that should be comprehended in disarmament education ('Substantive Approaches', sec. A, para. 8). While the list offers some basis for conceptualizing a coherent, comprehensive approach, it is basically nothing more than a laundry list of what might go into disarmament education curricula. The document provides many significant guidelines, but it does not offer the kind of conceptual map necessary for the development of good curricula. Neither does it provide for any integration of pedagogy into the list of substantive topics through which the knowledge, skills and values for the comprehension and application of the substance might be learned. A coherent, comprehensive, conceptual approach we believe offers the best possibility for the development of curricula and pedagogies of disarmament education that can be widely adaptable to diverse educational conditions,

yet share a common core substance and purpose necessary to making education a significant factor in the achievement of disarmament.

A comprehensive approach is well suited to the need and, we would hope, the intention to disseminate disarmament education throughout the school systems of the world. It is a way of assuring that there will be enough commonality in all the multiple variations that worldwide dissemination calls for. Such an approach does not exclude variety nor lack room for multiple interpretations of the teaching-learning process, rather it encourages them as a way to further develop the general field. It also provides a platform for dialogue among educators with common concerns but very different circumstances. By comprehensive we in no way mean homogenized, a point that was essential to our approach to the development of *Learning to Abolish War*. We believe that variety and diversity are attributes of good peace education and that the same would hold true for disarmament education.

Our concept of disarmament education is that it is an integral and essential part of peace education with its own substantive integrity and specific methods that fall within the realm of peace education pedagogies, but are tailored to the particular problems and issues of disarmament with its own specific teaching methods integrally related to the substance. While we recognize that much peace education methodology is readily adaptable to disarmament education, we believe that the importance of the field merits the kind of comprehensive planning and development of methods and materials that can manifest its unique role and place in peace education. Particularly important, in our view, is the introduction of disarmament education into teacher education, calling not only for the development of materials and methods, but also for the inclusion of appropriate substance, introduction of the materials and training in use of the methods of disarmament education into teacher education courses. We hope that some peace educators in teacher education institutions will take up this task.

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Conclusion: disarmament education is essential to the new phase of peace education

It is evident that we believe the primary promoters of disarmament education are current peace educators who would agree that education for global civic responsibility should be a major focus of peace education in the new phase of the field that is emerging with the Global Campaign. Peace educators are among those in the teaching profession most inclined to see the need for disarmament education. They may need some help in seeing the viability of what previous generations of peace educators have found forbidding and forbidden. However, by opening discussion on the three points we posed to account for the problem of its being forbidding, by presenting them with the kind of conceptual comprehensive approach we have advocated, and providing opportunities for them to develop and/or be trained in appropriate methods, they could be the vanguard of a movement to bring disarmament into the school curricula as an integral component of peace education.

Involvement of those now offering peace education as the first to be enlisted in efforts to establish and strengthen disarmament education could also provide agents for encouraging international co-operation among educators, and a source of support to and solidarity with those disarmament educators who may, for a few years, still be minorities in their own professional communities. The Global Campaign will be seeking to cultivate such co-operation. It is our hope that some of the collaborative efforts the Campaign is encouraging among peace educators from various

countries will be in the area of disarmament education. We will continue to include disarmament education in teacher-training workshops, collect relevant curricula and make them available to educators through the network of peace education centres, post disarmament education lessons on the Hague Appeal for Peace web site, and address questions of disarmament education at Campaign events such as the International Institutes on Peace Education.

The world needs disarmament, and so does peace education. We hope to have the material means and the co-operation from disarmament experts and peace educators working together to bring disarmament fully into peace education—so that it may actually make its very significant potential contribution to the achievement of disarmament. The land of disarmament education is no longer completely unknown. This is the time for peace educators to venture into it.

Note

- 1 <http://www.haguepeace.org>

Developing an Internet-based educational module

Jean Pascal ZANDERS and Kurt LAFORCE

In November 1997 the Chemical and Biological Warfare Project of the Stockholm International Peace Research Institute (SIPRI) and the Centre for Peace and Security Studies of the Vrije Universiteit Brussel (Free University of Brussels, VUB), with the financial support of the International Relations and Security Network (ISN) at the Swiss Federal Institute of Technology, Zurich, set out on a pilot project to create an Internet-based educational module on the non-proliferation of chemical and biological weapons (CBW). At the time of writing (May 2001) the second version of the basic-level module is online¹ and work on the intermediate and advanced levels of the module is in progress. The full module, known as the *Educational Module on Chemical & Biological Weapons Nonproliferation*, is scheduled to be completed by the end of 2001, with final testing and implementation of user recommendations taking place in 2002.

As a pilot project, the creation of the Internet module was meant as an experiment. Several major challenges were immediately identified:

- Can a small group of people with limited or no programming skills easily and cheaply create an educational module?
- Since the core purpose is education, is it possible to insert a pedagogic strategy into the module that goes beyond the mere hyperlinking of discrete text components?
- Does the computer and the Internet offer educational advantages over the more traditional textbook approach and, if so, how can these be optimized?
- How can the limitations imposed by the computer hardware and the Internet be overcome? This question is relevant not only from the perspective of the educational and programming strategy, but also from the viewpoint of the user, who may not have the latest computer technology available or who may live in a region with bad communications or power shortages.

The goals and constraints suggested often contradictory strategies and tools. Their reconciliation became a major preoccupation and the 'optimal' solution often emerged only after trial and error.

This paper describes the educational module on CBW non-proliferation as it is currently available on the Internet. It reviews the theoretical foundations of the educational strategy. It then discusses the initial ambitions of the module creators, their learning processes and how they had to adapt the educational strategy, content and programming to the possibilities and the limitations of the Internet. The article concludes with some suggestions for future initiatives.

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Description of the module

The educational module consists of introductory, intermediate and advanced levels of understanding of the processes involved in CBW armament, disarmament and non-proliferation. Each level comprises several issue areas, the so-called 'pillars'. A pillar is made up of a collection of text and graphical units, which are connected with each other via hyperlinks. Portals enable the user to move from one pillar to another. In the future, portals will also allow the user to move from one level to another. Finally, the module contains two semi-autonomous components: (i) a glossary with basic descriptions and definitions of terms, organizations and treaties, and (ii) the texts of the documents referred to in the module. Their principal function is to provide additional information on the content presented in the pillars.

The development plans of the module also envisage tools for the user to evaluate his or her progress. This self-evaluation function would enable the user to move up to the next level if he or she obtains a sufficient score. However, the complexities involved in the design of the questions and the programming of the engine to evaluate the answers have so far prevented the incorporation of the self-evaluation function into the module.² An alternative strategy to allow the user to move up a level may have to be devised.

THE INTERFACE

A standard interface for all parts of the educational module has been implemented. The computer screen is divided into three frames: the main window with the texts and text navigation tools; the primary navigation button, which takes the user back to the point of entry for the level and which also gives access to the site map and the help function; and the glossary.

The user moves between the texts via colour-coded hyperlinks: blue links lead to other texts; green ones to the glossary. The blue links are the key to the principle of the non-linear presentation of information: the user can explore the pillar via different routes. In the top right-hand corner there is a smaller copy of the navigation button, which takes the user up one level (i.e., to the portal of the current set of texts). Several clicks will ultimately bring him or her back to the opening page. On each side of this navigation button are a back and forward arrow in case the user wishes to study the texts in a sequential order like the pages of a book.

As indicated earlier, the 'pillar' is the central structure of organized information. On each page the name of the pillar is indicated on the top left, and is accompanied by a colour code. This colour code is unique to each pillar, and serves as a navigational tool and warning sign as the user may unwittingly move from one pillar to another (via a portal or via the glossary).

Finally, the user occasionally meets 'Chemy', a bright yellow gas mask cartoon character. Chemy provides the user with background information about the learning goals, explains the options, recommends related topics in the module, or leads the user to the help functions in the module.

THE BASIC LEVEL

The basic module introduces the user to the processes of CBW armament, proliferation, disarmament and non-proliferation and explains the basic concepts. Each topic makes up a self-contained pillar of information.

At the core of the basic module is the assimilation model of armament.³ This model looks at the proliferation process from the demand side (i.e., the political entity seeking CBW)⁴ and examines the dynamic interaction between political, material and doctrinal factors that promote and obstruct the armament dynamic. While this approach dispels with the idea that proliferation is inevitable or continuous, it also highlights the difficulties and shortcomings of disarmament and non-proliferation policies in dealing with a proliferator. These issues are at the heart of the intermediate and advanced levels of the module.

The 1972 Biological and Toxin Weapons Convention (BTWC) and the 1993 Chemical Weapons Convention (CWC) are presented as part of the disarmament pillar, although most of the discussion focuses on those treaty provisions that deal with the transfer of treaty-relevant materials. All documents related to the analysis (e.g., the full texts of the conventions, statements by the Australia Group, and so on) are included and the user can access them via hyperlinks in the text or via the glossary.

The final component of the basic module is the case studies. The analysis of Iraq's CBW programme is currently online. The discussion of Libya's CW programmes is in its final testing phase and will be on the Internet in early June 2001. It draws on academic analysis and public court documents of the trials of Belgian and German individuals involved in the illegal shipment of materials to Libya. A third case study dealing with Russia's efforts to acquire a chemical warfare capability between 1915 and 1945 is under development. It draws attention to the efforts a pre-industrialized society must undertake to acquire the scientific, technological and manufacturing capability for a large CW programme, and how political and military upheavals interfere with the military readiness to wage chemical warfare. While the user can approach each case study as an information unit in its own right, the texts have been thematically organized in accordance with the four pillars. As such, they illustrate the theoretical explanations. In addition, they will form the basis for the comparative analyses on the higher levels of the module.

THE INTERMEDIATE LEVEL

The intermediate level discusses the interaction between the pillars of the basic module, thus leading to three new pillars: armament–disarmament; armament–non-proliferation; and disarmament–non-proliferation. The basic purpose of the intermediate-level pillars is to make the user aware of the impact of these interactions on policy outcomes.

The armament–disarmament pillar explains how domestic processes (in this case, the armament dynamic) undergo the influences of and influence the international environment. The link between the two components is 'functional equivalence'.⁵ If a particular class of weaponry is in functional equivalence between two or more adversaries, then the expectation that any of these adversaries can achieve a relative gain with that weaponry is extremely low. This condition creates opportunities for co-operative international security offered by arms control and disarmament. The various conditions of functional equivalence are explored and explained in relation to the BTWC and the CWC.

The armament–non-proliferation pillar explores how non-proliferation measures by supplier countries impact upon the armament dynamic of the country seeking weapon technology abroad. It analyses the consequences of the armament dynamic and the non-proliferation policies on the international environment.

The third pillar contrasts disarmament and non-proliferation policies and discusses the different ways in which they seek to halt or reverse the armament dynamic. Particular attention is paid to how the respective measures affect the international security environment.

All three pillars are firmly rooted in international relations theory, and gains theory in particular. The intermediate level is designed in such a way that the users of the module who are primarily concerned with policy options can obtain this information without having to bother about the theoretical foundations. Academics and students, on the other hand, can enter the intermediate level via the theoretical portal and take the discussions of armament, disarmament and non-proliferation as practical illustrations.

The intermediate level is currently under development. The first pillar on the interaction between armament and disarmament is in the testing phase and will be added in June. The other two pillars are expected to be ready later in the year.

THE ADVANCED LEVEL

At the heart of the advanced level of the educational module are scenario analyses, which will be based on variations of the interactions in the intermediate level. The purpose is not to offer the module user a comprehensive overview of all possible policy outcomes, but to give him or her an impression based on realistic parameters of the results or consequences of certain policy options, and of how the execution of certain policies may be constrained by factors beyond the control of the policy-maker. The advanced level is expected to be ready by the end of 2001.

In order to prepare the advanced level, the SIPRI CBW Project, VUB and ISN held a three-day seminar in Zurich in March 2001 in which two groups of international experts were each presented with a different hypothetical country of proliferation concern. All participants are also contributing to a book, which will be published by ISN early in 2002.

The educational strategy

The educational strategy of the module is based on the view that learning is a constructive effort. Although constructivism recognizes that prior knowledge has a decisive impact on the learning process, it posits that knowledge is foremost socially constructed.⁶

Hypermedia technology appears ideal to support constructivist learning environments.⁷ Hyperlinking information also makes it possible to avoid the *pre-arranged* linearity of information (such as in a textbook). It has the advantage of reflecting the human thought process more accurately than the tutor-defined, prearranged thought process. By following the hypermedia links in a sequence unique to his or her individual understanding, the student takes charge of the construction and the testing of his or her own knowledge.⁸ He or she selects individual pathways through the internal architecture of the educational tool, and as a result follows his or her own thought processes.⁹

Hyperlinking information also makes it possible to avoid the pre-arranged linearity of information

At the outset the educational module on CBW non-proliferation was conceived as an explorative learning environment in which the user would have the greatest possible degree of freedom to explore the available information.¹⁰ In order to avoid strict textual hierarchy and rigid linearity the user had to be presented with a wide selection of hyperlinks. The opportunity for applying the constructivist approach to the module was further enhanced by the selection of a specific target audience rather than the general public—policy-makers and shapers (including politicians and the media), diplomats, senior military personnel, researchers and students in international relations. The

professional learner was assumed to be mainly interested in CBW proliferation issues to improve his or her work-related knowledge.¹¹ The profile was based on the assumption that the user (i) possesses basic knowledge about arms control and disarmament in general, but not necessarily relating to CBW, (ii) has a self-directed learning capability, and (iii) requires prompt information retrieval as time is a valuable resource.

The constructivist approach towards learning portrays an ideal situation in which a student actively participates in the educational process and has a clear idea of his or her learning goals. While developing the basic level of the educational module on CBW non-proliferation, however, this ideal representation became the source of a major pedagogical problem: even though a hypermedia environment probably best reflects a student's thought processes, it is likely to generate navigational disorientation, because, in contrast to the more traditional media, the student can easily lose track of the structure of the information base.¹² This is primarily due to the so-called 'small window problem'.¹³ A computer screen is limited in size and can therefore only project a limited amount of information. Furthermore, the screen frame physically and mentally detaches the projected information from the rest of the observable environment. As an immediate consequence the student lacks an overall view of the problem, the broad base of information needed to solve the problem and, hence, the ability to set learning goals and devise strategies to achieve these goals.

During the initial construction of the basic module it was the intention to create as many hyperlinks as possible, as the number of hyperlinks stresses the degree of interdependence between concepts used in the module. Unfortunately, the approach resulted in a virtual maze. As the user was left with full navigational control, he or she had no sense of direction. Such freedom within the module clearly reduced the effectiveness of the learning process. Despite the power of the educational philosophy of constructivism, it was clear that the educational strategy needed adjustment in order to compensate for the 'small window problem'.¹⁴

A compromise between tutor- and student-controlled educational strategies had to be devised. In the compromise strategy, the tutor (i.e., the module developers) defines the interim and ultimate learning goals, while the student is allowed to construct his knowledge base according to these goals. Bearing the crucial constructivist principle in mind that all learning activities must be anchored to a larger goal, task or problem,¹⁵ the compromise solution to the navigational problem was found in the concept of 'flexible hierarchy'.¹⁶ According to this concept, the information is organized in virtual chapters, the 'pillars'. Two basic criteria determine whether a piece of information is included in a pillar: (i) the piece of information must be conceptually related to the other pieces of information in the pillar and (ii) it must contribute to achieving an interim learning goal.

From the student's perspective flexible hierarchy means that he or she retains a high degree of navigational freedom in a controlled learning process. In accordance with the constructivist educational approach flexibility relates to the student's ability to navigate within one of the virtual chapters according to his or her insights. Hierarchy then refers to the ways in which individual pieces of information are hyperlinked to other information units inside a pillar in accordance with an interim learning goal. This goal is identified as the minimum knowledge needed to enter a higher level of the educational module. The student still possesses absolute freedom in the choice of a virtual chapter, as the study of one pillar does not presuppose the knowledge of the contents of another pillar on the same level of the educational module.

The educational module has also been set up as an expert system. In his foreword to Allan Lerner's study on the interaction of politicians and experts in decision-making, Harmon Zeigler states that 'elected officials are required to deal with issues containing components too sophisticated for them to comprehend. Thus they turn to experts for information, and the experts' knowledge is easily transformed into a political resource for the acquisition of influence.'¹⁷ Peter Haas, in assessing the

same dynamic, expressed concern about how the growing technical sophistication and complexity of international relations significantly increase uncertainty regarding the preferred policy options amongst decision-makers.¹⁸ From this perspective spreading knowledge about CBW armament dynamics, non-proliferation and disarmament may be one strategy to stimulate advanced and qualified thinking about policy alternatives. In a world of increasing globalization, new information and communication technologies, such as educational modules, may take on the role of an expert. Educational modules can thus be viewed as expert systems that aim to introduce the arms control community as well as

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current and future decision-makers to various policy strategies by offering a body of background knowledge, while stimulating the assimilation of knowledge. As a result, they should feel less uncertain with respect to the different policy options and thus be able to make higher quality decisions.

The educational module on CBW gives the computer a knowledge base equivalent to that of an expert and tries to generate insights into the complex dynamics of CBW armament, non-proliferation and disarmament. Thus, an expert system contains a body of ideas, principles and assumptions about these topics which, by applying an educational strategy, triggers a process of learning. Its aim is to offer the user a cognitive framework for analysing complex problems in order to develop causal beliefs and corresponding policy options, the underlying mechanism of this process being that acquiring knowledge will eventually produce qualitative decision-making. When state actors are viewed as uncertainty reducers, their representatives turn to networks of professionals who supply policy-relevant knowledge. Educational modules may then be one tool in the hands of epistemic communities to provide the necessary background for decision-making. Epistemic communities are networks of professionals with recognized expertise and competence in a particular domain and an authoritative claim to policy-relevant knowledge within that domain or issue area.¹⁹ When incorporated by an epistemic community, an educational module may thus indirectly influence the decision-making process.

Writing the module texts

The development team embarked on the module project with a very naive belief: the greatest challenges would be posed by the development of the appropriate software and the reflection of the educational strategy in the programming. In terms of the content, the SIPRI CBW Project has produced many studies and has a large archive with the key documents, which could all easily be inserted into the educational module. This assumption could not have been farther from reality. The existing texts had mostly been written for a specialist audience, or dealt only marginally with the topics central to the module.

The following major issues surfaced early on:

- In view of the realization that the primary target audience must absorb information under considerable time pressure, the pillars had to be designed in such a way that these people can acquire the required knowledge within a relatively short time span and without any external assistance. As a result, the texts of a pillar have been split up in so-called 'need-to-know' and 'nice-to-know' information loops. A 'need-to-know' loop contains the texts that are necessary for the user to achieve the primary learning goal (i.e., being able to move on to the next level of complexity). A 'nice-to-know' loop contains additional background information or the theoretical foundation of the analytical framework. The distinction between both types of loops

is only relevant to the module developers, and reflects the primary goal of contributing to knowledge-assisted policy making.

- Many users could be expected to be non-native speakers of English. As a consequence, the texts had to be constructed in such a way that they not only increased the technical understanding of CBW armament, non-proliferation and disarmament, but also expanded the user's vocabulary and understanding of key concepts. The glossary with its brief definitions and explanations is the main help tool. In addition, some texts with more detailed explanations of terms, treaties or issues have been unobtrusively integrated into the basic level of the educational module in order to prevent users from becoming discouraged for the complexity of the subject matter. Similar pages will explain more advanced concepts in the higher levels. Certain entries in the glossary provide a 'more information' link to these pages. Once the intermediate and advanced levels are added to the module, the user will also be able to reach these pages on the lower levels via the glossary in order to refresh his or her understanding of the term.²⁰
- Texts should ideally be no longer than what fits on a computer screen. Computer experts briefed the module developers that 80% of Internet users do not scroll down a screen in order to read the hidden parts of a text. Consequently, the data had to be broken up into information units of maximum half a printed page. This proved impractical for two main reasons. First, the proliferation of pages in the module would make the whole unmanageable for the developers and appear interminable to the user.²¹ Second, considering that each page requires its own introductory and closing paragraph, it was simply impossible to break up certain items into such small information units. Nevertheless, a standard of less than one printed page was adopted, with an absolute maximum of one and a half pages (used mostly for purely descriptive items). While this standard requires the user to scroll down, it was felt that it would not devalue the usefulness of the educational module because he or she could be expected to have greater motivation and inquisitiveness than an average Internet user.
- Finally, as a consequence of the constructivist educational approach each text had to be written as a self-contained information unit. As the user was to be granted the greatest possible freedom in exploring the knowledge base, it was impossible to predict how he or she would arrive at a particular page. This problem was particularly acute in the initial phase of building the module as the opportunities to hyperlink to other pages had to be maximized. It was eased after the reorganization of the educational module based on the principle of flexible hierarchy because the user moves within the context of a particular information pillar. The opening paragraph is now often used to insert links to those pages that explain the origin or basis of the central topic in the current page, and the concluding paragraph may contain links to pages that explore certain aspects of the central topic further. In this way flexible hierarchy is concretely implemented: the user always has the freedom to choose between several routes, and the links in the opening and closing paragraphs give a sense of the general direction towards achieving the learning goal.

As a consequence of having to deal with these four issues at all times, the writing process has evolved considerably. The full-length papers of the very early phase were almost immediately abandoned in favour of a plethora of short texts. This was a consequence of implementing the constructivist educational philosophy before its limitations with respect to the educational module were appreciated. The writing method had a significant disadvantage (and its realization was the direct precursor to the development of the concept of flexible hierarchy): there was no constraint on what material should be included in the module. As each term or concept required explanation or

discussion, each text led to several new texts, and it was extremely easy to lose sight of the forest for the trees. In one particular example, during the development of the section on the Chemical Weapons Convention for the basic module, the verification mechanisms were discussed in great detail. Some twenty pages had been written before it was realized that the inspections regimes for industrial facilities and CW destruction sites were marginal at best to the core topic of CBW non-proliferation.

As a result of this experience, the text writing returned to the development of full-length papers (i.e., around 20–25 pages), but this time the papers were written specifically for the module and followed a predetermined outline. These papers were split up in information units, which were then each completed with the introductory and closing paragraphs. Where needed supplementary pages were added to enable the smooth transition from one information unit to another or to highlight the choice of different routes. Each such paper thus became an information pillar. Because of the greater internal cohesion and sense of direction of the explanations, the writing method contributed to the conceptualization of flexible hierarchy.

The shift in writing method also required some sort of ‘floor plan’, so that the partners responsible for the insertion of the texts into the software framework would know how to hyperlink the various information units. This led to the creation of flowcharts indicating the position of each text in the pillar and how each text was to be linked to other texts.

The flowcharts proved to be an important innovation in the writing process as they pointed out weaknesses in the initial outlines. With the development of the intermediate level module, the creation of the flowchart outlining the individual information units for a pillar has become the first step in the writing process. Instead of producing a full paper, texts are now developed for each indicated information unit. Where necessary, additional texts are written and their relationships to other texts are immediately marked on the updated flowchart. This new writing method, which expresses a mature integration of educational theory and its practical application for the Internet, has also proved to be an important time saver.

Using the educational module

The Internet-based educational module on CBW non-proliferation is accessible at no cost from the VUB and SIPRI web sites, and additional mirror sites may be created in the future. The cost-free access is a fundamental principle agreed between the project partners: while the authors of the texts and the software interface retain their full copyright ownership, they make no commercial profit from their work.

The three project partners—SIPRI, VUB and ISN—encourage the widest possible distribution and use of the educational module, on the condition that user access is cost-free under all circumstances. Should the authors become aware of commercial exploitation of their work, they will exercise their copyright control and either deny further use or charge them for continued use (while retaining the free access principle elsewhere). There also exists a CD-ROM version of the module, which may be reproduced freely under the same conditions.²² Permission to use the educational module in academic curricula, courses or other educational settings is usually granted following a simple request to one of the three partners. The opening page of the module contains the relevant e-mail addresses.

As noted in the introduction, the *Educational Module on Chemical & Biological Weapons Nonproliferation* was started as a pilot project to test the feasibility and limitations of using the

Internet for long-distance education. There is no reason why the modules should be limited to chemical and biological warfare. To this end, a module constructor will be available on CD-ROM in late 2001. It contains the interface plus the necessary tools to insert the texts. Again, the module constructor will be available at no cost, and may be used provided the non-commercial principle is respected.

A module constructor will be available on CD-ROM in late 2001 and may be used provided the non-commercial principle is respected.

Conclusions

This paper has described the origin, the educational strategy, and the development of the text contributions of an educational module for the Internet. The experience so far has proved that:

- It is possible for a team of people who are not programming experts, but who have expertise in education and the subject matter to create an educational module for the Internet that meets the specific needs of a particular community.
- It is possible to create such a module relatively cheaply. In this project, some of the largest costs involved the remuneration of a programmer and salaries. With the availability of the CD-ROM with the module creator software, some of these costs can be reduced for future projects. In addition, some of the time lines for development and production should be shorter as a phase of trial and error in developing the software, the educational strategy and the text writing method can be avoided. In any case, an organization should be able to create its own module within a typical grant by a foundation or charity.
- Modules can be set up in different ways: a module implies a modular structure so that individually developed components can be linked up with each other. The module on CBW non-proliferation has a vertical structure with three levels of complexity and is being developed by a single team. It is also possible to create an educational module with a much wider information base, whereby several independent teams develop the modular components (e.g., one team dealing with nuclear non-proliferation, a second one with nuclear arms reductions, a third one with the nuclear test ban, and so on). Course developers may in fact connect several modules and integrate them into a single curriculum. These modules could then share common databases (e.g. the glossary or documents). Such clusters of modules can cover an ever-widening field of interest. Good co-ordination and full agreement regarding the educational goals and strategies will remain crucial, however.
- It is necessary to have a clear concept of the educational goals to be achieved by the module. These goals ultimately determine what will be included and what information is redundant, and how the various information units will be grouped in pillars and linked to each other.
- The students will discover ways of using the module never envisaged by the developers. Based on comments and requests for use of the CBW non-proliferation module, people use the module as a reference base (especially with respect to all the included documents) or as a tool in formal teaching environments.
- Success of the module will generate pressures to include tools and function to meet some specialist or alternative needs. It is absolutely imperative that the module developers stay as close as possible to their original goals, because minor structural modifications in one part of the module can have big effects in other parts as a consequence of the strong inter-connectedness of all components.

- The module creators will themselves undergo a major educational process. In the need to be absolutely clear to an audience with less knowledge or expertise about the module topic, the crafting of the texts and the hyperlinks will enhance their understanding of the subject matter considerably. Faulty or shaky assumptions and ambiguities are soon revealed and need to be addressed, as other parts of the module will show the contradictions and inconsistencies. Case studies serve to illustrate the more conceptual parts of the module to the student, but for the module creators they also play an indispensable role in testing the exactness and logic of the core components.

In summary, Internet-based educational modules may be instruments to inform politicians, diplomats, military personnel, researchers and other relevant actors about the opportunities and constraints of the various arms control and disarmament options. This not only assumes that the module users will eventually take part in the decision-making process or social debate regarding CBW arms control and disarmament but, perhaps more importantly, also that the user is prepared to actively take part in the learning process. This constructivist approach inevitably implies that any change in the individual position will only become perceptible in the longer term as that person slowly changes his or her world views and beliefs chiefly with great personal effort.²³ Nevertheless, the true value and usefulness of an Internet-based educational module was already presaged in one of the conclusions of the 1980 UNESCO World Congress on Disarmament Education: 'In addition to reaching the general public, disarmament education has a more specific and equally crucial task of providing rational arguments for disarmament based on independent scientific research which can guide decision-makers and, to the extent possible, rectify perceptions of a potential adversary based on incomplete or inaccurate information.'²⁴

Notes

- 1 The CBW non-proliferation educational module can be accessed at <http://poli.vub.ac.be/cbw> or <http://cbw.sipri.se>
- 2 The current online version of the educational module contains a self-evaluation function that consists of yes/no and matching pairs questions. However, it was soon felt that these types of questions do not test the understanding of the armament, disarmament and non-proliferation dynamics. Multiple-choice questions increase the complexity of the design and complicated the scoring utility. The problems can be resolved by programming extra scripts (e.g., in JAVA) or by using specialized software packages for testing and evaluating students. These solutions, however, increase the demands on computer hardware and require relatively fast Internet connections, and therefore run counter to the key premise that the module should be accessible to users with less powerful computer technology or poor communications. Pedagogic experts also recommended open-ended questions. However, this would require the appointment of a tutor who interacts with the module users, and it was felt that this went against the core idea of a self-teach module.
- 3 J.P. Zanders, 'The demand side of CBW proliferation,' in D. Schroeer and M. Elena, eds., *Technology Transfer*, Ashgate Publishing, Aldershot, 2000, pp. 167–86.
- 4 The term 'political entity' is used to refer to all types of political actors, such as states, sub-national groups or terrorist organizations. For an example of the application of the assimilation model to terrorism, see J.P. Zanders, 'Assessing the risk of chemical and biological weapons proliferation to terrorists', *Nonproliferation Review*, vol. 6, no. 4 (fall 1999), pp. 17–34.
- 5 J.P. Zanders and E.M. French, 'Article XI of the Chemical Weapons Convention: Between irrelevance and indispensability', *Contemporary Security Policy*, vol. 20, no. 1 (April 1999), pp. 56–85.
- 6 This is not the appropriate forum to discuss the details of constructivist theory in order to expose its various subtleties. For a debate on its merits and problems we refer *inter alia* to the May and September 1991 issues of *Educational Technology*.
- 7 D.J. Cunningham, T.M. Duffy and R.A. Knuth, 'The Textbook of the Future', in C. McKnight, A. Dillon and J. Richardson, eds., *Hypertext: A Psychological Perspective*, Ellis Horwood, Chichester, UK, 1993, pp. 19–50.
- 8 For a brief introduction to web-based application of constructive learning processes, see S. Alexander, *Teaching and Learning on the World Wide Web*, <http://elmo.scu.edu.au/sponsored/ausweb/ausweb95/papers/education2/alexander>, version current 3 May 2000.

- 9 According to Lemke this idea should be further developed by designing 'hypermedia works that invite the user to interact with them and construct, on each occasion of use, an individual trajectory through the resources the work contains.' The next step would consist of applying artificial intelligence tutoring to fashion user-specific expert systems by analysing user input. J.L. Lemke, *Hypermedia and Higher Education*, <http://134.95.100.201/themen/cmc/text/lemke.93b.text>, version current 4 May 2000.
- 10 For instance, L. Van den Brande, *Flexible and Distance Learning*, John Wiley and Sons, Chichester, UK, 1993, p. 27.
- 11 G. Marchionini and H. Maurer, 'The Roles of Digital Libraries in Teaching and Learning', *Communications of the ACM*, vol. 38, no. 4, 1995, p. 68. In distance learning environments Collis explicitly distinguishes between professional and non-professional learners whereby the degree of professionalism is derived from the job-related learning need. B. Collis, *Tele-learning in a Digital World. The Future of Distance Learning*, Alden Press, Oxford, 1996, pp. 154–58.
- 12 A. Dillon, C. McKnight and J. Richardson, 'Space – The Final Chapter or Why Physical Representations are not Semantic Intentions', in C. McKnight, A. Dillon and J. Richardson, eds., *op. cit.*, p. 174.
- 13 L. Davie, 'Facilitating Techniques for the On-Line Tutor', in R. Mason, and A. Kaye, eds., *Mindweave: Communication, Computers and Distance Education*, Pergamon Press, Oxford, 1990, p. 78.
- 14 The need for greater directional guidance actually first surfaced in the text writing process, as will be explained below.
- 15 J.R. Savery, 'Problem-based learning. An Instructional Model and its Constructivist Framework', *Educational Technology*, September/October 1995, p. 33.
- 16 'Flexible hierarchy' is most likely only one among several possible solutions to the 'small window problem'. The concept emerged from the many discussions between SIPRI and VUB as both partners had to deal with the navigation issue in the text writing and the software development respectively.
- 17 A.W. Lerner, *The Politics of Decision-Making. Strategy, Cooperation, and Conflict*, Sage Publications, London, 1976, p. 13.
- 18 P. Haas, 'Introduction: Epistemic Communities and International Policy Coordination', *International Organization*, vol. 46, no. 1, 1992, pp. 1–35. Some integration theorists even went one step further. Gathered under the umbrella of *functionalism*, they have been trying to explain the growth of (international) organizations as a response to the growing complexity and number of functions or tasks demanding attention. Their normative claim was that the panoply of technical problems in modern society could best be resolved by experts, rather than by politicians. Successful co-operation in one field would then spur further collaboration in related fields. See D. Mitrany, *A Working Peace System*, Quadrangle Books, Chicago, 1966.
- 19 Haas, *ibid.*, p. 3.
- 20 A script has been developed to automatically detect glossary entries in new text pages and create links to these glossary entries. These links are subsequently reviewed for redundancy (e.g., a term might appear several times on a single page), relevance (e.g., the noun 'chemical' is incorrectly linked to the glossary entry 'chemical weapon'), or appropriateness (e.g., a link is created to a glossary entry on a higher level, thus enabling the user to move up a level without having completed the learning goals of the current level).
- 21 In its present form, a single pillar of the basic level can consist of up to 70–100 web pages.
- 22 The CD-ROM version is produced in limited quantities only, usually for distribution at conferences and international gatherings. However, it has less functionality than the Internet version as it does not support the database engine that generates the pages dynamically as the user accesses them. As a consequence, the CD-ROM contains all the texts as individual hyperlinked files. Certain features of the glossary are not available and the user does not have access to external web resources.
- 23 Hence the inclusion of students and scholars in international relations, and of media representatives in the target group. Their interest in CBW proliferation and disarmament may produce only an indirect or delayed impact on the decision-making process.
- 24 *UNESCO Report and Final Document*, World Congress on Disarmament Education, Report number SS-80, CONF. 401 REV/COL.51.

Reflections on scientists and disarmament

Science and technology constantly break through the limits of what is possible, even what we can imagine. These developments entail complex ethical, moral and humanitarian implications that challenge all concerned humans—but perhaps most of all the scientists who actually push forward new discoveries. Joseph Rotblat, recipient of the 1995 Nobel Peace Prize and one of the founders of the Pugwash Conferences on Science and World Affairs, clearly articulated this concern. ‘Whether directly through the development of new military capabilities, or indirectly through the uneven distribution of the benefits of new technologies, the future of civilization and the very existence of the human species is imperilled. Scientists bear much responsibility for this danger and must take steps toward its removal.’¹ We have asked three contributors, Serge Franchoo, Arjun Makhijani and Arthur Petersen, to address the subject of involving scientists—a potential and often overlooked audience—in disarmament education and ethics. — *The Editor*

Engaging natural scientists in disarmament

There are three significant structural and institutional reasons why natural scientists often remain outside of the arms control debate: the focused nature of science education; the importance of scientific objectivity; and scientists’ relation with society.

Lack of interdisciplinary study

Science education is highly specialized, unlike other disciplines where an interdisciplinary or ‘liberal arts’ education is valued as a way to develop well-rounded intellectuals. Interdisciplinary study in the natural sciences is limited to related sciences (for example, a physicist might study mathematics and chemistry, but not sociology). Doctorates are based upon the thorough investigation of one specific detail of a scientific theory or experiment. Science students have little time or opportunity to explore courses other than those directly related to their research. This intense concentration does not end once the science student becomes a professional researcher—often he or she is forced to specialize even further.

For most natural scientists, their day-to-day research on the one hand and disarmament and non-proliferation issues on the other seem worlds apart. Why, for example, would a natural scientist study disarmament treaties? It would seem that the topic would be much more relevant to, for

instance, lawyers or political scientists. At first glance, fundamental research into the laws of nature has little in common with geopolitics or security analyses. The forefront of natural science often finds its motives in itself, without too much concern regarding practical applications. Those applications surely will come later, but other people—not the researchers having unveiled the physical principles or pushed forward new discoveries—will implement them. This compartmentalization of the scientific process with strictly delimited tasks for the actors involved is intrinsically linked to the high degree of specialization necessary in many aspects of a high-tech society.

The belief in independent, objective science

In addition to the structural constraints of science education, there are often institutional hindrances to scientists wanting to get involved in politically charged subjects. By this we mean the relative scarcity of ‘intellectual spaces’ where scholars and natural scientists can dialogue about their common concern for public problems. Science is meant to be objective and factual. Many universities and laboratories are wary of taking political positions and therefore do not encourage public debate on politicized issues such as disarmament.

Even if one argues that every issue has its political dimension, the conviction that research should be guided by its own thrust, independent from and indifferent to the outside political and social world, is deeply rooted. At variance with the all-embracing worldviews typical of Greek and mediaeval philosophers, this conviction is probably linked to the principles of modern scientific method established during the Enlightenment. Determinism perceived in the physical laws excluded temporary human interference in the evolution of society, whilst encyclopedism strove to gather the full spectrum of opinions, from which authoritative objectivity was to be extracted. Today scientific objectivity, beyond doubt, remains a goal, but scientists should perhaps reconsider the innate idealism of this attitude.

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The perceived absence of political consciousness (by remaining objective) amongst scientists creates a vacuum that others might happily take advantage of. By means of illustration, consider the ongoing debate on depleted uranium (DU). For the public at large, DU is a mysterious substance and only gradually has a correct definition seeped through the media. Although the DU debate also circulated amongst scientists, hardly any institute or laboratory ‘weighed in’ on the subject. Nuclear laboratories raise the objection that while they can calculate the radiological properties of a material, it is beyond their competence to evaluate its toxicity, its effect on living organisms or the risks posed by its use on the battlefield, and therefore remain mute.

Ultimately political institutions like the United Nations² and military organizations such as NATO³ appointed their own specialists to investigate the matter. Whereas the conclusions of these studies have proven to be essentially convergent, the impartiality of those undertaking the research has been questioned. In such cases, the public often rates the credibility of the research results at the value it attaches to the body that ordered the study. It is difficult to say whether the impartiality of research would be as questioned had an independent panel of scientific experts carried out the work. Of course, a purely scientific committee probably would not be perceived as 100% objective either, as long as one could not guarantee that its members had nothing to gain or lose in its findings.

In a way it is understandable that research institutes take extreme care not to mix in political life. Throughout history, the first application of a scientific discovery often has been a military one, driven to an apogee fifty years ago with the Manhattan Project and the subsequent development of the

thermonuclear bomb. Out of fear that Nazi Germany was working on a nuclear weapon, Albert Einstein wrote a letter to President Roosevelt in 1939 to urge him to accelerate similar research by the United States. The resulting somewhat negative reputation of nuclear physics being pro-armament has perhaps led to science as an institution receding to what its critics call an 'ivory tower' and avoiding politics. With a remarkable obstinacy it firmly adheres to its insular position and distances itself from parliamentary quarrels and military mayhem.

Yet this is not necessarily an accurate perception. It should not be forgotten that after the war, the Russell-Einstein Manifesto of 1955 was an appeal by some of the world's premiere scientific minds against any further use of these weapons. In 1960, Max Born (Nobel Prize winner in physics in 1954) wrote 'We physicists are, moreover, very willing to place our experience at the disposal of politics. For we are aware of the fact that the political crisis was brought about by our research, and we feel greatly responsible.'⁴ This contrast between the role of scientists in armament through weapons development and in disarmament serves as a poignant example how science can dominate public life when scientists decide to take a stand.

The relationship with society

The belief that funding for fundamental scientific research can be secured by not rebuffing any governmental authority may turn out to be flawed. At some point science needs to justify how it spends the money it receives from funding agencies. Since in many countries this predominantly concerns tax money, science should be accountable to the public. This is a critical issue, as professional researchers often cite the ignorance of the public whenever they feel misunderstood. Public outreach by universities and laboratories as well as continuous education are the proper remedies. Public ignorance should not be a pretext to lock oneself up in a laboratory and shirk one's responsibilities towards society, as epitomized in the stereotype of the inaccessible scientist lost in his experiments.

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In an age where science and technology have a major impact on everyday life, the decoupling of science from society is an unfortunate evolution. Although governments today are far from technocracies, it is worrisome that less privileged parts of society experience difficulties in gaining access to new technologies. Apart from financial considerations, the increased complexity of equipment, computers and techniques can be off-putting. It is understandable that a general public lacking a basis of scientific knowledge feels confused by the conflicting messages about science proffered by industry, politicians, scientists and advocacy groups. In a sense there is a reciprocal lack of education—for the public to keep up with scientific and technological developments, and for scientists to nurture the necessary skills to render their research accessible to non-scientists in a concise and digestible way.

In this area, the situation is improving. Several research establishments have realized the need for communication about scientific discovery and developments and have public outreach/communications offices at their disposal. However, in the end it is only a half-measure—scientists must learn to communicate directly with the public.

Currently, much of this communication is accomplished through scientific journalism, which introduces scientific discoveries and progress to the general public. While helpful, scientists must learn to 'cut out the middle man' and do their own communication. There are two crucial elements for this to happen. First, there must be a shift in the scientific mentality. Scientists must understand that communication with the non-scientific public is essential. Second, scientists must have the opportunity to develop the necessary oral and written communication skills to achieve this goal.

To take one example, CERN, the European Organization for Nuclear Research,⁵ has been extremely proactive in its approach to education and communication. Guided visits to the laboratory, travelling expositions, public lectures, webcasts, school visits and so on are elements of CERN's efforts to demystify their work, as well as offer an introduction to particle physics to the general public.

A unique element of CERN visits is that many of the guides are volunteers from among the scientists or students working at the lab. This offers an excellent opportunity for researchers to interface with the public and to communicate about their work. Perhaps such a programme could be even further improved by offering the researchers some sort of training for oral presentations, which in conjunction with writing resources, might augment their communication skills. Similar sorts of initiatives could be encouraged during science studies. While pursuing a doctorate, students might be urged to develop speaking and writing skills, perhaps through working at a science museum or visiting schools.

Scientists concerned with disarmament

Despite the constraints outlined here, a number of organizations seek to engage natural scientists with a concern for disarmament and arms control.⁶

The Union of Concerned Scientists (UCS)⁷ originated at the Massachusetts Institute of Technology in 1969. Advocating a stronger focus in scientific research on environmental and social problems, its founders understood the need to combine expert analysis with citizen advocacy. Nowadays about 50,000 members strong, the technical reports issued by the UCS are transmitted to policy-makers and the media through the Sound Science Initiative. The UCS Action Network encourages public debate.

The Federation of American Scientists (FAS)⁸ dates back to 1945 and can boast of a Board of Sponsors that includes fifty-one American Nobel laureates. Originally focused solely on arms control and nuclear disarmament, it currently engages in various areas of public policy, ranging from population, energy, medical care and ethnic conflict to global and national security, still with a predilection for intelligence gathering, arms sales, space policy and emerging technologies. While the FAS engages in a fair amount of lobbying, its work is complemented by public education campaigns.

The *Bulletin of Atomic Scientists*, published by the Educational Foundation for Nuclear Science,⁹ offers a forum for concerned scientists to enter into debate with the public. It is famous for its Doomsday Clock on the front cover, the hands of which move closer or further from midnight in reaction to international tensions and nuclear developments. Its hands moved most recently in 1998 from fourteen to midnight to nine to midnight, following the nuclear tests in India and Pakistan and the failure to realize cuts in nuclear weapon arsenals.

In Europe we single out Scientists for Global Responsibility (SGR).¹⁰ The successor of Scientists Against Nuclear Arms, Electronics and Computing for Peace, and Psychologists for Peace, SGR campaigns for the elimination of nuclear weapons and, more generally, for an ethical attitude towards the use of science and its impact on human life and the environment. It reaches its target public through conferences and briefing papers.

Together with several other organizations and individuals, SGR is part of the German-based International Network of Engineers and Scientists for Global Responsibility (INES).¹¹ Active worldwide, INES focuses on sustainability, although one of its prominent member organizations, the International Network of Engineers and Scientists Against Proliferation (INESAP),¹² is dedicated to non-proliferation issues, technology transfer concerns and the promotion of nuclear-weapon-free zones. One should add that INESAP leans towards a professional research institute rather than a membership organization.

The Italian Union of Scientists for Disarmament (USPID)¹³ promotes the belief that scientists have a social responsibility to provide information and analysis on aspects of arms control and development. USPID organizes conferences, courses and seminars, the proceedings of which are communicated to national politicians and opinion makers. It has linked up with the Landau Network-Centro Volta¹⁴ for several of its research programmes on international security, energy resources and biotechnology. Jointly with the regional office of UNESCO in Venice, the Landau Network-Centro Volta is in charge of organizing the International School on Science for Peace.

An international event of particular interest is the International Conference on Public Communication of Science & Technology (PCST)¹⁵ initiated in 1998 by the Laboratory for Research on Communication and Scientific and Technical Information (LABCIS)¹⁶ at the University of Poitiers in France. The next meeting will be held in South Africa in 2002. Addressing many of the issues concerning the relationship between science and the public raised in this article, it tries to create a bridge between researchers and communications professionals.

International Physicians for the Prevention of Nuclear War (IPPNW)¹⁷ is a federation of physicians across the globe founded by a group of American and Soviet medical doctors in 1980. With national branches in over sixty countries, IPPNW tries to convince fellow physicians, political leaders and the public of the urgent need to raise consciousness through education and take concrete action through grassroots initiatives. Its focus has widened from nuclear war to the prevention of all war, landmine and small arms issues as well as the remission of world debt.

The Pugwash Conferences on Science and World Affairs¹⁸ are held annually with intermittent workshops on specific topics. Since the Russell-Einstein Manifesto of 1955 and the subsequent first meeting in the village of Pugwash in Nova Scotia in 1957, Pugwash has diversified its activities from nuclear disarmament to the elimination of chemical and biological weapons, the origin of war, questions of national sovereignty, international security, and the ethical responsibility of scientists. A particular feature is that all participants attend the meetings in their personal capacity and not as representatives of any government or organization. Whereas at first the participants were selected from among prominent scientists, gradually diplomats and public figures were invited, such that at present about 2,000 people are involved. The principle of invitation, however, has not been abandoned.

The rather closed nature of Pugwash has guaranteed the high quality of its meetings and efficient lobbying of government officials. On the other hand, it has held up the influx of younger generations. The creation in 1978 of International Young/Student Pugwash (IYSP),¹⁹ which adheres to the same objectives as Pugwash but has remained organizationally independent, intends to address this concern. Student conferences are organized every year.

It is interesting to note that many of these organizations have widened their field of interest from the elimination of weapons of mass destruction to more general commitments on ethical considerations and sustainable development. One interpretation of this shift in focus might be that disarmament as a public concern no longer seems as immediately important as it did during the Cold War. With the loss of public interest in (mainly nuclear) disarmament, these organizations have been forced to widen their focus. An alternative interpretation might see this movement as reflecting the more recent awareness of the interrelation of the threats facing our world. Research on violent conflict cannot be divorced from development theory, which cannot be separated from environmental concerns, and so on. There seems to be growing acceptance that these problems can no longer be broken down into neatly compartmentalized elements.

Options for change

Political parties worry about maintaining and increasing links with their electorate, yet laboratories for the most part appear to be disinterested in public relations. It is therefore not surprising that in the absence of political action from their institutions, the political involvement of natural scientists has often been expressed through NGOs and advocacy institutions.

Unfortunately, awareness-building activities and activism at scientific research sites are on the whole not encouraged and NGOs rarely permitted to flourish. It often requires a great deal of personal motivation from the scientist to find his or her way towards the relevant advocacy organizations. Perhaps universities or laboratories could be persuaded to play a part by supporting an appropriate forum or an interface within their formal structures for NGOs. Some kind of liaison office could facilitate communication and explore further paths without committing the research institute itself to a political position.

Another option is the possibility for scientists to form a think-tank or scientific panel within the institution. Scientists are frequently invited by governments, international task forces or other civilian or military bodies to participate on expert commissions. The scientists approached may have to seek the permission of their employer, but usually accept on a purely personal basis. One might wonder if research centres would be willing to officially collaborate with national or international political bodies by providing well-grounded consultants from an internal pool that is accredited according to a certain set of principles. Those principles could refer to the scientific merits of the researcher, for which the laboratory is suitably placed to judge. If a provision is added that the institute does not necessarily subscribe to the views of the appointed expert, political escalations will be avoided, while at the same time an institutional channel is created for scientists to engage in society.

In the face of the persistent refusal of research establishments to adopt any position that may lean towards politics, these ideas might prove hard to realize. Outside control on the development of science has always been felt as a threat to academic freedom. Although public pressure on the accountability of science should not wane, a change of perception as to its role in society will probably have to arise from inside the laboratories.

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Training scientists in science and in assessing its impacts

Organized science usually legitimizes its claims upon the public purse by making assertions about its activities to the general good, or at least to the good of some particular group. This is a common thread in a large variety of scientific projects, from the building of nuclear weapons, to genetic engineering of plants, to research on new cures for cancer or AIDS. Yet, scientists rarely base their claims on an actual investigation of the likely impacts of their work. All too often, there is little or no factual or analytical basis for their claims. Further, rarely if ever do such claims put forth the potential negative impacts of the proposed work, especially if those impacts may jeopardize the funding of the work.

Moreover, there is little or nothing in the training of scientists that would prepare them to do the requisite analysis to make better-justified claims. Scientists are not required to understand the impact of their work on society; nor do they learn the methods by which they might make such inquiries for themselves. There is almost never any inquiry into or training for understanding conflict of interest issues.

Interestingly, the idea that science is objective, neutral, and therefore indifferent as to its beneficial or harmful applications, co-exists with the frequent assertion of social relevance of scientific research. The latter generally occurs in the context of appeals for money. The appeal to objectivity is in the everyday pursuit of work, where it helps to prevent questioning. The neutrality of science is also frequently proclaimed when the negative social results are obvious and cannot be denied. By contrast, I know of no instance when neutrality has been claimed when the beneficial aspects of research have become evident.

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Given that scientific research not only has beneficial impacts, but also often has negative effects, science education should be structured so as to give analytical and factual foundation to the claims those scientists make about the impact of their work on society. If there is rigor in the pursuit of scientific work, there should also be rigor in the claims that are made for its impacts.

Were science education focused on the private pursuit of knowledge for its own sake without any demands upon the public purse and without significant impacts upon health, well-being, and the environment, there might be a case for focusing science education on technical matters alone. But the pursuit of pure knowledge uncomplicated by social impact is not typical of scientific work. On the contrary, it is the norm that institutional science has major impacts on society and ecology. It follows, therefore, that the current model of science education that focuses mainly on technical issues is fundamentally incomplete and not suited to the real world.

The minimum requirements of science education, in addition to technical competence, should therefore include:

- Case studies of claims made by scientists of beneficial impacts say for reducing poverty, and the actual results, in all their complexity.
- Ethical studies of conflict of interest including investigations of whether sources of funding tend, on average, to affect the tone and sometimes the outcome of research.
- The extent to which scientifically questionable practices, ranging from shading of interpretation to outright fraud and data fabrication, occur in science.
- The manner in which the selection of topics for study and research is affected by the availability of funds and possible conflicts of such selection for problems that do not get addressed. For instance, after more than half a century, research on the synergistic effects between chemicals and radiation has received scant attention.
- Processes by which scientists as individuals and as members of institutions must be accountable to society.
- Processes in which scientific research and study can become accountable to future generations, which by definition cannot be consulted but nonetheless are likely to experience major adverse impacts of many scientific decisions made today.
- The study of environmental impacts and of assessing alternative ways of solving problems.

One way in which these lines of inquiry could be pursued is for academic research to be subjected to review not only by other technical specialists in the field, but also by the people about whom implicit and explicit claims of beneficial effects are being made. This should become a regular part of the training of scientists so that they become used to operating within an accountable, democratic framework as an essential complement to the narrower world of peer review.

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Ethics, science and society

The public involvement of scientists in societal issues was a central concern in the recent conference 'Challenges for Humanity in the XXI Century' (Geneva, 30 March–1 April 2001) organized by Swiss Student Pugwash. This issue was extensively discussed in the working group on Ethics, Science and Society. It was concluded that many scientists are trained to be narrow-minded in the sense that they are discouraged to take part in ethical discussions and accept social responsibility for their work. The main mechanisms sustaining this situation are early specialization and the lack of sufficient overlap and interaction between disciplines.

Several strategies were discussed that could encourage more 'broad-minded' participation of scientific minds in society:

- involving scientists in two-way (!) communication with the public;
- integrating indigenous and 'alternative' knowledge within science; and
- developing the scientists' ethical consciousness.

The working group focused in some detail on the third strategy. Two proposals were evaluated: compulsory or elective courses on ethics, science and society, and a Hippocratic-type oath for scientists. The courses should not be traditional ethics courses. A considerable amount of time should be spent on general philosophy and social science, preferably together with science students from other disciplines. The real and large-scale problems science and society face today, disarmament and arms control included, should be reflected in the subjects covered by the courses.

In our discussion about an oath for scientists, we used the pledge published in 1995 by Student Pugwash USA (Spusa) as a reference: 'I promise to work for a better world, where science and technology are used in socially responsible ways. I will not use my education for any purpose intended to harm human beings or the environment. Throughout my career I will consider the ethical implications of my work before I take action. While the demands placed upon me may be great, I recognize that individual responsibility is the first step on the path to peace.' The Spusa pledge received wide support among the working group. However, since some members raised specific objections to the text, we embarked on an exercise to come up with alternative wordings on which we all could agree. The new text is not intended to replace the old one, which some working group members may have found more appealing, but can be offered as an alternative in case someone is sympathetic to the idea of a pledge, but has problems with the specific 1995 formulation.

The Geneva 2001 version of the Spusa pledge reads: 'I promise to work for a better world, where science and technology are used in socially responsible ways. Throughout my career I will

consider the ethical implications of my work, and the potential harmful consequences. While the demands placed upon me may be great, I recognize that individual responsibility to humanity is the first step on the path to peace.'

The working group on Ethics, Science and Society is aware that the problems of science and society cannot be solved by the introduction of a pledge. Important topics, such as new institutions and a moral constitution addressing the way society should deal with science and technology, were discussed as well. We recognized, however, that individuals can make a difference and that a pledge can help to shape their sense of responsibility.

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Notes

- 1 Joseph Rotblat, 'Taking Responsibility, *Science*', vol. 289, 4 August 2000, p. 729.
- 2 United Nations Environmental Programme, Balkans Task Force, <<http://balkans.unep.ch/du/du.html>>
- 3 <<http://www.nato.int/du/home.htm>>
- 4 *Bulletin of the Atomic Scientists*, vol. XVI, no. 6, June 1960.
- 5 <<http://public.web.cern.ch/Public>>
- 6 The situation up to the 1980s is covered in a review by Joseph Rotblat, *Scientists, the Arms Race and Disarmament*, A UNESCO/Pugwash Symposium, London/Paris, 1982.
- 7 2 Brattle Square, Cambridge, MA 02238, USA, (+1) 617 547 5552, <<http://www.ucsus.org/index.html>>, ucs@ucsus.org
- 8 307 Massachusetts Avenue, NE, Washington, DC 20002, USA, (+1) 202 546 3300, <<http://www.fas.org>>, fas@fas.org
- 9 6042 South Kimbark Avenue, Chicago, IL 60637, USA, (+1) 773 834 1746, <<http://www.thebulletin.org>>
- 10 PO Box 473, Folkestone, Kent CT20 1GS, UK, (+44) 07 771 883 696, <<http://www.sgr.org.uk/>>, sgr@gn.apc.org
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- 15 <<http://www.cern.ch/pcst2001>>
- 16 ICOMTEC Futuroscope, Téléport 5, BP 64, F-86130 Jaunay Clan, France, (+33) 5 49 49 46 59, <<http://icomtec.univ-poitiers.fr/Default.htm>>, fayard@campus.univ-poitiers.fr
- 17 727 Massachusetts Avenue, Cambridge, MA 02139, USA, (+1) 617 868 5050, <<http://www.ippnw.org>>, ippnwbos@ippnw.org
- 18 136 Irving Street, Cambridge, MA 02138, USA, (+1) 617 576 5022, <<http://www.pugwash.org>>, pugwash@amacad.org
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Curriculum development and ethics in international education

Ian Hill

The Great War of 1914–1918 demonstrated in a terrible manner the way in which nations were distrustful and intolerant of each other. In the uneasy peace of the 1920s and 1930s, national leaders began the first tentative steps towards global co-operation. The International Labour Office and the League of Nations were established in 1919 and 1920 respectively, with their headquarters in Geneva and staff drawn from many countries. There was a need for a school which would cater for children with a diversity of languages and cultures, a school which could prepare them for university education in their home countries. So it was that in 1924 the International School of Geneva was founded by a group of parents predominantly from the League of Nations and the International Labour Office. The parents, motivated by a belief in the objectives of the organizations they served, wanted a school which would give the child:

a complete and rounded view of the world which was the workshop of his parents; not only the view, but the knowledge and understanding; not only knowledge, but the love and the desire for peace, the feeling of the brotherhood of man.¹

This was the first international school. The United Nations International School (UNIS) in New York, founded in 1947, espoused the same philosophy as did the first of the United World Colleges, Atlantic College, founded in 1962 in Wales, which deliberately united young people from many different countries to be educated and grow together. Many other international schools emerged from 1924, initially for the utilitarian purpose of serving the rapidly expanding population of students residing in countries other than that of their first nationality, but there was at least a hint of ideology for a better world which grew in importance. It was in these multicultural schools, above all, that the seeds of peaceful coexistence and international understanding should be nurtured and developed.

After the Second World War international education exchanges between the United States, Europe and the Middle East occurred. The Government of the United States launched itself into 'bilateral internationalism' by supporting student exchanges—particularly at the university level. Many foreign students studied at universities and colleges in the United States and the 1946 Fulbright Act allowed many Americans to study overseas.² In 1950 UNESCO sponsored teacher exchanges

Dr Ian Hill was born in Tasmania where he was a teacher and administrator in government schools, and a university lecturer in teaching methodology. From 1986 to 1990 he was Senior Private Secretary/Advisor to the Minister for Education in the state of Tasmania. He then moved to France as Director of the International School of Sophia Antipolis, a bilingual International Baccalaureate Diploma school, and to Geneva in 1993 to become Regional Director for Africa/Europe/Middle East in the International Baccalaureate Organization (IBO). In the same year he completed a PhD thesis on policy processes during the development of the International Baccalaureate diploma. He is now Deputy Director General of the IBO, based in Geneva. The web site of the IBO is <http://www.ibo.org>

across the world and its Associated Schools Project linked children and teachers across cultures. These factors contributed to cross-cultural exchanges whose major objective was to learn to understand people of other nations by living and working with them.

With the advent of international schools and their population of students from diverse cultures came a curriculum problem. Teachers were concerned about the inappropriateness of national curricula for providing a truly global dimension and international experience in the academic programme. The informal relationships between culturally diverse individuals in an international school setting should be enhanced by formal recognition in the academic subjects, methodological approaches and international comparisons which would enable individuals to see their own cultural identity in relation to the rest of the world. And so, the International Baccalaureate Diploma Programme (IBDP) was developed appropriately and largely by the staff of the first of the international schools during the 1960s with the first official examinations in 1971. (Two other international programmes are now offered: since 1992 the Middle Years Programme for students from 11 to 16 years of age, and since 1997 the Primary Years Programme for children from 3 to 11/12 years of age.) UNESCO provided financial and moral support for the development of international curricula until the mid-1970s. Although the programme was originally intended for the internationally mobile student population, a number of national ministries of education have since implemented the IBDP in some state schools (now representing 45% of the current 2,050 schools) in an attempt to internationalize their education systems.

The philosophy of the IBDP

The ethical underpinning of the programme is captured in the mission statement of the International Baccalaureate Organization (IBO) officially founded in 1968 in Geneva.

Through comprehensive and balanced curricula coupled with challenging assessments, the International Baccalaureate Organization aims to assist schools in their endeavours to develop the individual talents of young people and teach them to relate the experience of the classroom to the realities of the world outside. Beyond intellectual rigour and high academic standards, strong emphasis is placed on the ideals of international understanding and responsible citizenship, to the end that IB students may become critical and compassionate thinkers, lifelong learners and informed participants in local and world affairs, conscious of the shared humanity that binds all people together while respecting the variety of cultures and attitudes that makes for the richness of life.

This text has many similarities with UNESCO's description of international education.³ The IBO seeks to develop citizens of the world who:

- are aware of global issues (such as world peace and environmental concerns);
- appreciate, respect and understand other cultures; and
- have an understanding of and respect for the human condition in all its manifestations.

The world is interdependent in many ways as it has never been before: the economy, labour market, technology, research, arts, politics, communication, travel, transmission of culture, human rights, genetics, natural disasters, armed conflicts, the protection of natural resources. Intercultural understanding assists the appreciation of global issues and the human condition. It helps to explore

questions such as: what are the cultural reasons for that government not legislating to control damage to the ozone layer? How does a particular ethnic group or nation look after its elderly, the street children, the poor, the disabled, the immigrants? It also assists responsible citizens to be aware of the 'world affair' *par excellence*: peaceful coexistence. The ingredients of intercultural understanding have been nicely captured in the following statement by a former Director General of the IBO:

... we require all students to relate first to their own national identity—their own language, literature, history and cultural heritage, no matter where in the world this may be. Beyond that we ask that they identify with the corresponding traditions of others. It is not expected that they adopt alien points of view, merely that they are exposed to them and encouraged to respond intelligently. The end result, we hope, is a more compassionate population, a welcome manifestation of national diversity within an international framework of tolerant respect. Ideally, at the end of the IB experience, students should know themselves better than when they started while acknowledging that others can be right in being different.⁴

We are concerned then with forming attitudes and values. IB students give much time to world issues, to the environment, to poverty and other human problems. This is not only due to the general global approach of the curriculum, but above all to the requirement of ongoing social service among the community which is considered as important for the development of the students as academic studies. In short, it is an education for life, a responsible life, open to the problems of our world and encouraging students to give time and energy to bring about change.

Whose values?

Values are learnt, not inherited. Education therefore performs a fundamental role as one of the factors which shapes values. They do not exist in a vacuum and they are not immutable; circumstances can cause one's beliefs to change. Cultural relativists argue that values are very much tied to cultural contexts and may be influenced by the political, economic and social environment on an international, national, local and even family level. The current tension between national interests and a global market as espoused by the World Bank and the World Trade Organization is a case in point. A number of local producers feel that a supranational scheme may not address their concerns and may limit their chances in the international marketplace.

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A former African president found refuge in the cultural relativist's argument when he exhorted that his actions not be judged by Western standards: 'Mes pratiques peuvent paraître condamnables dans d'autres milieux, sous d'autres cieux, dans d'autres contextes; mais pas en Afrique' [My practices may be reprehensible in other places, beneath other skies, in other contexts; but not in Africa].⁵ This does not, however, excuse the many inhumane acts attributed to him. A set of universal values as in the Declaration of Human Rights transcends cultural boundaries.

The Constitution of UNESCO⁶ opens with the following words: 'Since wars begin in the minds of men, it is in the minds of men that the defences of peace must be constructed.' This is why it is possible and indeed essential to talk of the role of education and culture in building positive inter-community relationships. This is what international education is about.

But if values are dependent on cultural context, can we identify a set of culturally neutral universal values to which all people aspire? Core values are embedded in the age-old cultural

traditions of human civilization. For instance the following set of desirable universal values are to be found in the *Report of the International Commission on Education for the Twenty-first Century* (known as the Delors Report):

- awareness of human rights combined with a sense of social responsibilities;
- value of social equity and democratic participation;
- understanding and tolerance of cultural differences and pluralism;
- a caring, co-operative and enterprising spirit;
- creativity;
- sensitivity to gender equality;
- open-mindedness to change; and
- obligation to environment protection and sustainable development.⁷

The essence of the *Delors Report* is the identification of four overarching pillars of education: learning to know, learning to do, learning to live together, and learning to be. These are fundamental to any set of universal values. The most important of these for the establishment of a culture of peace is learning to live with each other; however, this is not easily achievable unless one is 'bien dans sa peau' ['at peace with oneself' is a close but inadequate rendering in English] as the French so aptly put it. And being 'bien dans sa peau' involves learning to know, learning to do and above all learning to be. This is the role of education in a global context. But an international perspective is not easily achievable without an understanding of one's own culture as a yardstick by which to understand others. The global outlook does not deny national or local imperatives; on the contrary, the supranational perspective is a construction of all nations which contribute to it. It is not surprising that employees of the UN and its agencies were the main actors in the establishment of the first international school in Geneva; these intergovernmental organizations represent national collaboration.

Article 26, paragraph 2 of the UN *Declaration of Human Rights* provides the philosophical planks of an international education:⁸

Education shall be directed to the full development of the human personality, and to the strengthening of respect for human rights and fundamental freedoms. It shall promote understanding, tolerance and friendship among all nations, racial or religious groups, and shall further the activities of the United Nations for the maintenance of peace.

However, agreement on such universal values does not necessarily mean that different nations or ethnic groups will act in the same way. Walker has remarked that it is the interpretation of universal values which causes problems.⁹ He suggests that they will be given varying priorities by different people. Although universal values exist we are still trapped by their manifestation in hugely different circumstances. At a local level it is inconceivable that the members of a family who are bordering on death from starvation or those who have just seen their closest relatives murdered in cold blood before their eyes by an out-of-control army can have the *largesse d'esprit* to embrace lofty principles associated with international understanding in the same way as a comfortable middle-class family in a secure, first world country. Walker makes a helpful reference to Maslow's classic hierarchy of needs: from basic survival (food, water) through a sense of belonging, the acquisition of competencies and esteem to self-fulfilment, curiosity and the need to understand. Note that understanding occurs after all the other needs have been fulfilled. Is it any wonder that universal values are not interpreted in the same way? Add to this the Machiavellian manipulation of religious

or universal principles by unscrupulous political leaders or rebels to suit their own ends and we have whole populations who are disoriented by imposed values that are at odds with what they feel should be right. This is why the IBO mission statement is also concerned with compassion and understanding the human condition in all its variety.

Ethics and the IB diploma curricula

Students must study one subject from each of five major discipline groups—literature (in the student's best language), language (including modern and classical languages), individuals and societies, experimental sciences and mathematics. The sixth group, the arts, is optional and may be replaced by a second choice from one of the other five groups or a school may propose a syllabus for a subject which does not already exist, called a school-based syllabus. If this passes the rigorous screening process it will be accepted as a subject of the IB diploma. Three (and not more than four) subjects must be taken at Higher Level (HL) and three (and not less than two) at Standard Level (SL). The majority of students take three HL subjects and three SL subjects. HL involves more time, more content and more depth than SL. HL subjects are accepted as equivalent in academic rigour to traditional GCE 'A' levels (in the United Kingdom) and Advanced Placement subjects (in the United States). In addition, all students must study the theory of knowledge, the Extended Essay and Creativity, Action and Service (CAS). The remainder of this section provides some selective examples of IB curricula contributing to an education for ethics.

LETTERS AND HUMANITIES

The IBO offers literature courses in approximately fifty languages at native-speaker level. In addition to the literature pertaining to the language of the course, students must study three works of 'World Literature'. These must have been originally written in a language different from the student's language and they are normally read in translation. The purpose of world literature is to develop an appreciation of how different cultures influence and mould the experiences of life. Students will develop values, attitudes and respect for behaviour and points of view different from their own without necessarily being in agreement.¹⁰

The history course includes cultural interpretations of events and 'an appreciation of the historical dimension of the human condition'.¹¹ The geography programme seeks to promote 'a global perspective and international understanding through geographical education' and 'respect for different cultures through an understanding of their development and their interrelationships'.¹² The core content themes are: population dynamics, economic growth and development, human responses to natural hazards, agriculture and world food supply, and urban environments.

The IB diploma philosophy course promotes skills of conceptual analysis, rational argument and sensitivity to other points of view. It is rooted in an examination of the human condition which includes the concept of the other and the examination of ethical issues. One of the aims of the course is to enable students to 'examine critically their own experience and their ideological and cultural biases'.¹³

History of the Islamic world was created in part for students in non-Islamic countries to appreciate the origins of this religion. Unfortunately media reporting often shows Islam linked to international terrorism. Fanatical elements exist in many religions and religious devotees have been manipulated

for political motives for centuries—the ongoing unrest in Northern Ireland is evidence of this in the Christian world. This course aims to show that Islam is one of the great world religions, that it has fundamental values rooted in respect for others and the peaceful resolution of conflicts, and that Islam has many followers in addition to the Arab world.

EXPERIMENTAL SCIENCES

A key aim of the experimental sciences is to ‘raise awareness of the moral/ethical, social, economic and environmental implications of using science and technology’.¹⁴ This addresses the human condition, the dignity of mankind, an integral part of international understanding. UNESCO has initiated agreements to control genetic research during the last part of the 1990s, and other agreements about nuclear weapons, chemical warfare, landmines, and protection of the natural environment have also been drawn up by the UN and its agencies. These are important contributions to values education that students should be aware of.

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Environmental systems clearly addresses a key global issue of international education. The IBO guide states: ‘... since the resolution of the major environmental issues rests so heavily upon international relationships and agreements, the programme naturally leads students to an appreciation of the nature and values of internationalism’.¹⁵ Most syllabus topics have international ramifications: for example global cycles and physical systems, the ecosystem, human population and carrying capacity, impacts of resource exploitation, conservation and biodiversity, pollution. As with the other subjects in this group, ethical and political responses to the material are required.

THEORY OF KNOWLEDGE

This compulsory course is fundamental to the educational philosophy of the IB Diploma Programme and has no exact equivalent in national education systems. It develops critical thinking skills. The curriculum is divided into three main parts: knowers and knowing, ways of knowing and areas of knowledge. One of the key aims of knowledge theory is to ‘identify values underlying judgements and knowledge claims pertinent to local and global issues’.¹⁶

The curriculum guide abounds with topic questions relating to intercultural understanding and values. Here are a number of examples:

- Students are asked to ponder the meaning of the Ghanaian proverb: ‘If the frog tells you that the crocodile is dead, do not doubt it.’
- What is the role of language in creating and reinforcing social distinctions such as class, ethnicity and gender?
- Should scientists be held morally responsible for the applications of their discoveries?
- Are there ethical obligations for humanity to treat the natural environment in a certain way?
- What are human rights and on what basis do they rest?
- When the moral codes of individual nations conflict, can criteria be developed for an international morality which transcends them?
- What beliefs or knowledge, if any, are independent of culture?

These are, of course, difficult questions with no right or wrong answers. The learning is in the process, in the class discussion which needs to be skilfully prepared and facilitated by the teacher.

CREATIVITY ACTION SERVICE

This compulsory component of the diploma programme encourages students to participate in sports, artistic pursuits and community service on a weekly basis. In this way young people share their energies and talents while developing awareness, concern and the capacity to work co-operatively with others. 'The IB goal of educating the whole person and fostering a more compassionate citizenry comes alive in an immediate way when students reach beyond themselves and their books'.¹⁷ CAS addresses consideration of the human condition and the honing of values. Many projects in schools around the world also promote intercultural understanding and attention to global issues.

An IB school in Atlanta, Georgia (USA) started a project with other schools throughout North America to campaign against landmines by increasing public awareness of the number of innocent people treading on them each day and the cost and danger in clearing minefields. Students work with refugee families to reinforce the language of the host country and to provide moral support; IBO schools in the developing world (or visiting from abroad) assist local schools and villages with books, materials, taking lessons, and inviting local students and teachers into the IBO school to integrate with the students who may be expatriates. In a number of schools IB students provide weekly survival (literacy and numeracy) and recreational programmes for street children in both developed and developing countries. Students in an IBO school in Uganda, in collaboration with UNICEF, address the global issue of AIDS through local action. They give weekly moral support to families with HIV positive parents, building up memory banks of the family history and values told by the parents and recorded on tape by the students; this will then be available to the children after the parents have died.

'An international education must go well beyond the provision of information and is involved in the development of attitudes and values which transcend barriers of race, class, religion, gender or politics'.¹⁸ In this way many CAS activities contribute very personally to international understanding, the mark of world citizenship.

SCHOOL-BASED SYLLABI

'Peace and conflict studies' treats concepts of peace and violence, the phenomenon of human aggression, arms and disarmament, regions in conflict, and international organizations. The arms and disarmament section includes a discussion of the effects of nuclear weapons and warfare, the technological development of the arms arsenals and their effect on relationships between political blocs, the dynamics of the arms race, and initiatives for the control, limitation and reduction of armaments since 1945. Student assessment comprises a final written examination of three hours, two course work essays and oral presentations of course work.

'We are living in the midst of a permanent wartime economy. The most important capital good produced in the West today is weaponry. The most important sector in international trade is not oil or automobiles or aeroplanes. It is armaments'.¹⁹ This statement, almost a decade old, is no less true today and some developing

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countries are also producing arms to boost their economy—beating the West at its own game. To justify the huge sums spent on the manufacture of arms, politicians produce arguments about providing employment, developing technology, protecting their own country and boosting the national economy (in spite of the fact that very long-term loans at extremely low interest rates are usually negotiated with the consumer government and not reimbursed in full, if at all). Governments create loopholes to sell arms to the very countries they themselves have officially blacklisted. Few countries in the world can sleep at night with a clear conscience. It is important that students see this reality and reflect on it.

In 'World politics and international relations' role play is used extensively to simulate conflicts in international relations and other situations involving negotiations. One of its principal aims is to 'remove personal bias enough for [the students] to comprehend the perspective of any other nation and thus to promote international understanding'.²⁰ A recent examination question asked students to discuss the need for collective and individual rights in relation to the statement that Pan-Africanism reflects the African view of human rights as based on collective, community relationships, and not on the Western concept of individual rights.

'World religions' undertakes a critical yet sympathetic study of the beliefs and practices across the world in Buddhism, Christianity, Hinduism, Islam, Judaism and Sikhism. Its aim is to enhance intercultural and inter-religious understanding and an appreciation of the very similar values which underpin these religions.

Conclusion

The world's moral order is in some disarray. There are still far too many examples of man's inhumanity to man. There are inequitably distributed resources and a lack of any basic education for many millions of children in the developing world. Values education is lacking, inefficient or unsustainable when people are confronted with hard choices under pressure. The IBO, alongside many other NGOs and organized bodies, is promulgating humanitarian and ecological values through education. The private sector has also adopted the challenge. For example, the World Business Council for Sustainable Development, founded in 1991, is a coalition of some 150 international companies united by a shared commitment to three values: economic growth (important for social improvement), environmental protection and social equity. The number of success stories of good financial profits being made by upholding these values is growing as companies network to find creative solutions.²¹ There are alternatives to the sale of arms for economic stability and expansion.

The French scientific philosopher Michel Serres laments international relations which are based on dominance, power and competition. He remarks wisely that the winners will change over time as they always have throughout history. The irony is that dominance is the most shared thing in the world (over time). The tragedy is that the struggle for dominance multiplies human misery. The frustration is that no one really wins in the longer term and those in charge do not realize it or prefer to ignore it.²² Nelson Mandela articulated this same thought when he said: 'I am not truly free if I am taking away someone else's freedom, just as I am not free when my freedom is taken from me. The oppressed and the oppressor alike are robbed of their humanity.'²³ It appears that Costa Rica alone—the only country without an army—has understood.

Political leaders, preoccupied with national security, seem oblivious to the much larger threat to global security which will require a collaborative effort by all nations to harness and respect the world's natural resources for the preservation of the human race. Jeremy Rifkin, president and founder of the Foundation on Economic Trends, is one of a number who see the magnitude of

environmental changes altering the biochemistry of our planet and that this requires the undivided and united attention of the nations.²⁴

International education has a role to impart an ethic for the future of humanity. Not to impose but to allow students to discover and reflect for themselves. It should provide students with material on global issues, responses from some of the world's most creative thinkers and the opportunity to discuss. Without values students may be 'clever, knowledgeable, even wondrously creative, but they will never become citizens of the world nor give it their gifts as should those who have known a true international education'.²⁵

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When Stalin died there was a tape recording of Mozart's Piano Concerto in D minor, which he listened to frequently, next to his bed. He had specially requested it some years before when he had heard it broadcast on the radio. Like many despotic leaders before and since, Stalin was not lacking in culture but lacking in education for humanity.

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Small Arms Survey 2001: Profiling the Problem

At least 500,000 people are killed each year by small arms and light weapons. They die in an astonishingly diverse number of ways: as combatants in internal and inter-state wars; as participants in gang fights and criminal battles; as casualties of government-sponsored or condoned violence and terror; as innocent civilians trapped in deadly wars and social conflicts; and as victims of suicide, homicide or random acts of violence.

The causes of the violence behind these deaths are complex and multi-faceted, and the easy availability and misuse of small arms and light weapons is only one part of the story. Still, this statistic—half a million deaths each year—ought to catch our eye. After all, it is higher than the number of deaths in almost all recent wars. Thus, it is no exaggeration to call small arms and light weapons ‘the real weapons of mass destruction’. While they may not devastate entire cities or populations within a space of a few seconds, they are implicated in more than 1,300 deaths each day.

Aside from their direct role in armed conflicts and violence, small arms and light weapons are also widely used in ‘peacetime’ situations to terrorize individuals, to control or subdue groups and communities, to influence politics, to profit and amass personal gain, and to undergird and maintain power. Throughout the world—in both poor countries and rich ones—socially marginalized or desperately impoverished people may resort to violence in order to survive or to gain a tenuous foothold in society. At the same time, others—driven by power or greed—may use weapons to consolidate and build their positions. Over time, the result is a pervasive sense of social danger, insecurity and anxiety, exacerbated by self-perpetuating cycles and cultures of violence.

In worst-case scenarios, the end result is a totally corrupt or collapsed state. Only more effective national, regional and international measures to regulate various aspects of the small arms and light weapons problem can help break this vicious circle.

Concerted international action

Against this backdrop, governmental and non-governmental efforts have been galvanized to counter the proliferation and destabilizing accumulation of small arms and light weapons in recent years. Yet effective long-term policy requires reliable and comprehensive information and analysis on

all aspects of the problem—something that has been relatively rare to date. The *Survey* is intended to fill this gap.

Such a contribution is sorely needed since several characteristics of small arms and light weapons make them an uncommonly difficult and politically contentious issue for the international community to address. These include:

- The *nature* of the weapons—lethal, easy to use and transport, difficult to track, and relatively simple to maintain in circulation for a long time;
- The large *number* of producing companies and countries, which makes supply-side control a difficult logistical challenge;
- The legitimate *use* of these weapons for national and/or individual security and defence, and the acquisition or retention of such weapons when governments fail to guarantee the physical safety of their citizens;
- The ‘grey’ and ‘black’ *markets* in such weapons, which are often linked to transnational crime and drug trafficking, and to the activities of non-state actors;
- The *relationship* between light weapons flows, situations of economic insecurity and deprivation, and the ensuing social and political conflicts;
- The disarmament *requirements* of post-conflict settings, including the demobilization and re-integration of ex-combatants; and
- The differing national *norms* for firearms possession, use and reporting.

Small arms constitute a relatively new issue on the international agenda. So it is not surprising that there is still little agreement on the precise contours of the problem. It has been variously defined as an arms control and disarmament issue, a human rights and humanitarian law issue, a public health or economic development issue, a problem of post-conflict disarmament, or as an issue of terrorism and criminality. In the absence of a broad overview, each perspective focuses a different lens on the problem and advocates different solutions. There is also no agreement on which weapons are of greatest concern: pistols and revolvers, which are most numerous; military assault rifles, which are widely used in conflict situations; or hand grenades and high-tech portable military equipment, which cascade into civilian hands.

Whatever the perspective, three issues are clear.

First, controlling small arms and light weapons—which are responsible for most of the deaths and injuries, especially of civilian non-combatants, in recent wars—is of vital importance to the contemporary international security agenda. Precisely because small arms are so ubiquitous and have legitimate military and civilian uses, efforts to regulate and control them must be carefully crafted.

Second, as much of the work in the *Survey* shows, small arms and light weapons are more than just an arms control and disarmament issue. In his *Millennium Report* (2000), UN Secretary-General Kofi Annan pointed out that:

Small arms proliferation is not merely a security issue; it is also an issue of human rights and of development. The proliferation of small arms sustains and exacerbates armed conflicts. It endangers peacekeepers and humanitarian workers. It undermines respect for international humanitarian law. It threatens legitimate but weak governments and it benefits terrorists, as well as the perpetrators of organized crime.

Finally, small arms and light weapons do not proliferate by themselves. Rather, they are designed, produced and procured in response to demand by governments and/or civilians. They are sold, re-sold, perhaps stolen, diverted and maybe legally or illegally transferred several more times. Ultimately they are used and re-used, during or after conflicts. At each juncture in this complex chain of legal and illicit transfers, people—brokers, insurgents, criminals, government officials and/or organized groups—are active participants in the process. Regulation and control of small arms and light weapons must proceed from this simple fact.

Goals and objectives of the Small Arms Survey

The primary goal of the *Small Arms Survey* is to provide reliable information and analysis on all aspects of the problem of small arms and light weapons proliferation. Persuaded that transparency is a cornerstone of national and international accountability—as well as an indispensable element in effective policy-making—the *Survey* is an *independent transparency mechanism* that serves many audiences. Our work is based on the conviction that greater transparency for all small arms and light weapons issues will improve international, regional, national and human security.

Yet the task will not be easy. Until recently, such an initiative would have been considered virtually impossible. Even today, the available data are far from complete. Still, enough information exists with which to sketch an outline of the situation and to provide a 'roadmap' showing the way forward.

The *Survey* is committed to collecting and analysing the best available open-source data, and to sponsoring primary and field research that will generate new data. The *Survey* also carefully assesses and verifies the reliability of data before using it in its publications, and our research work is governed by four principles:

- *Using a multidisciplinary approach:* The problem of small arms and light weapons must be approached from a broad, multidisciplinary perspective. Proliferation and misuse are not purely an arms control and disarmament issue. Equally important (and context-specific) are the crime control, humanitarian law, economic development and public health perspectives.
- *Studying the multiple societal effects:* Far greater attention must be paid to the economic, social and human costs and consequences of small arms and light weapons proliferation and use. Only when the costs in terms of lost growth, stalled development and distorted allocation of government or household investment are quantified will the opportunity cost of inaction become irrefutably clear, and the benefits of even simple regulatory measures evident.
- *Examining different levels of the problem:* Small arms proliferation is not exclusively an international issue. It is also one with important regional, national and local dimensions.
- *Engaging multiple actors:* Small arms proliferation and control is no longer simply an issue for governments. Increasingly, non-governmental actors, including researchers and advocates, have a crucial role to play in shaping and developing policies in this area. Indeed, they are often the essential actors in the grassroots implementation of various global, regional or local measures.

What role might the newly launched *Small Arms Survey* play? A significant one, we hope. But this publication is only the most visible product of the activities of the *Small Arms Survey* project as a whole. Since its establishment in 1999, our Geneva-based resource centre has served as a node in the network of small arms research-based activities that includes field projects, occasional papers, conferences, workshops and other outreach activities. Our overall aim is to become a well-utilized international centre of excellence and expertise on all small arms and light weapons issues.

Introducing the Small Arms Survey 2001: Profiling the Problem

The seven chapters in this year's *Survey* address many of the most prominent small arms and light weapons issues. In this first edition, subtitled 'Profiling the Problem', we have chosen to present a broad overview of the state of the world's knowledge and awareness on different aspects of these wide-ranging issues.

In many cases, through a combination of comprehensive data collection, careful estimation techniques and best judgement where sources conflict or are unclear, we have sought to fill a few large gaps in our collective knowledge. Such a global overview is the first step in identifying more specific problem areas, topics for future research, and additional 'missing links' that can be supplied in future editions.

Chapter One (*Products, Producers*) concentrates on production, identifying more than 600 firms in at least 95 countries that produce small arms, light weapons and/or associated ammunition and parts. These figures are significantly higher than previous estimates. The major producers include: Austria, Belgium, France, Germany, Great Britain, Israel, Italy, the Russian Federation, Switzerland, the United States and—although hard data are difficult to come by—probably China. Although an estimate of the global value of annual production is still premature, available information suggests that, despite an increase in the types of small arms being produced, the market itself is not expanding. It may, in fact, be shrinking as a result of the recent downsizing of global armed forces and consolidation of defence industries. Nevertheless, the re-circulation of existing small arms and light weapons, and their longevity, suggests that global stockpiles continue to grow.

Chapter Two (*Stockpiles*) seeks to estimate global stockpiles of small arms and light weapons. It focuses on individual-use firearms, including military-style weapons belonging to armed forces, handguns and sidearms used by national police forces, and guns in civilian possession. Based on extrapolations from limited existing data, it concludes that, worldwide, there are at least 550 million small arms and light weapons, not including illicit civilian weapons. About 41% of these—226 million weapons—are in the arsenals of national armed forces, while 56%—some 305 million weapons—are in legal civilian possession. Only 3% are held by the world's police forces, and most surprisingly, less than 1% of such weapons are in the hands of insurgent groups.

Chapter Three (*Brokers*) highlights the crucial role played by arms brokers, dealers, transport agents and their associated networks in transferring small arms and light weapons. In the past, most brokers operated under the tacit or explicit aegis of state security apparatuses. Today they have increasingly taken on the role of independent private actors who exploit loopholes in laws and regulations, and sidestep the weak regulatory capacities of some states, to provide arms to conflict zones. The lack of harmonized national or international legal instruments, in addition to the absence of information-sharing arrangements between states, makes it particularly difficult to catch brokers directly engaged in illegal activities since transactions are carefully designed to circumvent, bend or break the fewest laws. The *Survey's* research does suggest, however, that the number of people engaged in arms brokering and shipping is actually quite small, and that they often operate in complex, fluid and opaque networks.

Chapters Four and Five (*Legal and Illicit Transfers*) present an overview of the legal, grey and black markets in small arms and light weapons. The *Survey* estimates the annual value of the legal small arms trade at between US\$ 4–6 billion. The top exporters for which reliable information is available are: the United States, the Russian Federation, Germany and Brazil. Other less transparent states that are likely to be major players include Bulgaria, China and Israel, for whom reliable information is not yet available. In all, more than 60 states are involved in the legal export of small

arms while almost *all* the world's countries are importers of varying quantities of small arms and light weapons.

The illicit trade in small arms—transfers that engender 'crime, conflict and corruption'—while far more difficult to assess, appears to comprise less than 20% of the total trade. The so-called 'grey market'—covert transfers conducted by governments or government-sponsored entities—appears significantly larger than the wholly illegal 'black market'.

Chapter Six (*Effects*) focuses on the social and economic impacts of small arms and light weapons proliferation and availability 'after the smoke clears'. It documents the relationship between availability and use, and highlights the similarities and differences between the direct and indirect effects of small arms use in the North and the South. The chapter also documents a broad array of indirect effects, including increasing insecurity for humanitarian relief workers and operations, the privatization of violence, strains on public health systems, increased violent criminal activity, and reduced economic activity and socio-economic development. The Inter-American Development Bank (IDB) estimated the direct and indirect costs of violence at US\$ 140–170 billion a year for Latin America alone. Such a figure clearly indicates the pressing need for further research on the effects of the use and availability of small arms and light weapons.

Chapter Seven (*Measures*) surveys the wide array of proposed or partially implemented multilateral measures at the global, regional and sub-regional level to 'tackle the small arms problem'. The aim is not to present a comprehensive analysis of all existing measures and initiatives, but to provide an introduction and overview of major efforts, to guide readers to other sources, and to lay a foundation for further in-depth studies. This chapter focuses especially on the recent development of regional instruments in the Americas, Africa and Europe, as well as specific multilateral efforts within such bodies as the OSCE, NATO and the UN (e.g. the *Firearms Protocol* being negotiated within the Crime Commission of the ECOSOC). It also sets out the major issues identified for the July 2001 *United Nations Conference on the Illicit Trade in Small Arms and Light Weapons in All Its Aspects*.

The challenges ahead

This first edition of the *Small Arms Survey* raises as many questions as it answers. Future issues will be devoted to addressing them. They will not present annual 'snapshots' detailing changes over the previous calendar year since the available data and nature of the problem make such a year-to-year survey inappropriate. Instead, the *Survey* will focus on particular issues and regions; refine the analysis and estimates of stockpiles and transfers; follow the development of regional and global initiatives; and highlight problem areas that warrant greater policy attention. Two important issues the *Survey* will focus on in future editions are the humanitarian and developmental impacts of small arms and light weapons proliferation and use.

In addition to refining our estimates of global weapons stockpiles, future editions will provide regional and sub-regional breakdowns to highlight areas of concern. We will also broaden the scope to include stocks and flows of other small arms and light weapons, including larger, more sophisticated weapons that are not in wide circulation, but nevertheless pose grave security risks. Efforts to track transfers will also focus on specific regions and sub-regions, especially those most seriously affected by conflicts and instability.

As an increasing number of states become able and willing to furnish reliable information on their transfers of small arms and light weapons, there will be an urgent need to present these data

in the clearest, most comprehensive and most harmonized fashion. Future editions of the *Survey* will analyse the strengths and weaknesses of existing national reporting practices and present suggestions for common definitions and standards to increase the utility and comparability of information. The *Survey* will also treat the growing problem of weapons brokering, and the link to other lucrative activities (e.g. trade in diamonds, drugs, tropical timber and other 'conflict goods'), analysing case studies, as well as providing details on the activities of prominent arms brokers.

Activities undertaken in the context of the July 2001 *United Nations Conference on the Illicit Trade in Small Arms and Light Weapons in All Its Aspects* will also be examined in next year's *Survey*, especially since this groundbreaking conference is likely to shape policy initiatives and priorities for years to come. Finally, such issues as marking and traceability, stockpile management and security measures, plus newer issues, such as the relevance of international instruments covering the transport of dangerous goods and the tracing of domestic production chains, will be covered in subsequent issues of the *Survey*.

Ultimately, the concerted efforts of all actors in this important disarmament arena will be successful only if the use of such weapons in peacetime, conflicts, wars and post-conflict struggles abates, and if individuals and communities can live their lives in greater safety and security. The role of the *Small Arms Survey* will be to monitor and report on these efforts, to raise awareness of their relevance, and to provide policy benchmarks in the years ahead.

This text is the introduction to Small Arms Survey 2001: Profiling the Problem (2001, Oxford, Oxford University Press) by the Small Arms Survey (SAS). SAS documents and analyses trends in small arms proliferation. ISBN: 0-19-924670-X (hardcover), 0-19-924671-8 (softcover)

Summing up disarmament and conversion events Arms control in crisis and disarmament at a turning point?

Today indicators for disarmament and conversion signal stagnation or even a reversal for the first time in over a decade. It seems that disarmament is at a turning point: arms control negotiations are in a crisis; efforts at conflict prevention and conflict resolution are a mixed bag of successes and failures; and conversion has slowed down. Despite this there is still much conversion work ahead, especially in reintegrating demobilized armed forces personnel and redundant defence industry workers in Eastern Europe as well as in military base redevelopment.

This introduction will look at the reasons for the crisis in arms control negotiations, will summarize the findings of disarmament and conversion trends, will draw attention to ongoing wars and conflict resolution efforts as well as to the prevailing trend of opting for a military solution to conflicts, and will, finally, draw conclusions, identifying possible future ways of revitalizing the disarmament and conversion process.

Crisis in arms control negotiations

A number of failed or stagnating negotiations on weapons of mass destruction symbolize the depth of the crisis in international arms control. But paradoxically, up to now, the crisis of institutionalized

(negotiated) arms control has not led to the complete end of disarmament. Arms control of the classical type between opposing blocs of military alliances has been in crisis since the mid-1990s. However, in contrast to *negotiated* arms control, disarmament can be carried out either on the basis of an arms control agreement, or unilaterally. Disarmament reduces military forces numerically (weapons, military personnel, etc.) and/or military power and renders conversion necessary: as long as financial, human and material resources are being freed from the military sector, there is also a need to convert them in order to avoid unnecessary social or economic effects or adverse political reactions.

Despite the highly visible gridlock in arms control negotiations, governments have reduced their military forces substantially: weapon systems have been decommissioned, troops demobilized, arms production capacities reduced, military bases redeveloped for non-military purposes, and military expenditures cut. The numerical reduction of military forces has actually been happening until recently and is continuing in a number of countries and in certain sectors, but the year 2000 may prove to be a turning point in numerical, quantitative disarmament.

How serious is the decoupling of actual disarmament from institutionalized arms control? Will governments continue to disarm unilaterally and convert military resources to non-military use as they did in the second half of the 1990s or will this decoupling process put an end to disarmament and conversion? What can arms control do to curb the currently prevailing intra-state armed conflicts and how effectively can it do this? What priorities are necessary to make arms control a facilitator of future disarmament and conversion?

Despite the crisis in arms control there have recently been successful arms control agreements. Arguably, the most important one was the extension of the Non-Proliferation Treaty (NPT) in May 1995 and the NPT Review Conference in April/May 2000. Unfortunately, this success story is called into question by the actual behaviour of the nuclear-weapon states, who have not come to terms on a comprehensive test ban or a fissile material ban, let alone complete nuclear disarmament—a requirement of the NPT. Another accomplishment was the Ottawa Convention banning anti-personnel mines, which took place outside the classical forums of arms control. Similar efforts stimulated by the landmine convention are now being undertaken to control the proliferation and excessive accumulation of small arms and light weapons.

Two aspects underlying the crisis of traditional arms control require particular attention: the increasing military dominance of the United States; and changed perceptions of military threats.

HEGEMONIC SUPERPOWER

Many post-Cold War arms control agreements were made possible because the Soviet Union, and later Russia, were in a weak position. The possible revitalization of Russia was seen in the United States and NATO as a realistic option. Reductions in military postures both in NATO and in Russia were therefore perceived as mutually beneficial. But with the continuing disintegration of the Russian military and the obvious loss of Russia's status as a military superpower, the US interest in strategic stability through bilateral arms control diminished; the bilateral superpower relations shifted to a clear and growing US dominance. Increasingly, with the Soviet threat gone, the United States believes it can control smaller states militarily, even if these states aim at nuclear capabilities or other types of weapons of mass destruction. The US concept is increasingly focusing on limiting the weapon systems of other countries without limiting its own room for action as the only global military power. This is most clearly illustrated by its plans for a National Missile Defense system.

This policy has long-term consequences. The limits of classical arms control demonstrate the logic of the well-known security dilemma. Wherever a hegemony exists or armaments are asymmetrically distributed, arms control is likely to come to a stand-still. The 'haves' do not see an incentive to give up their superior position, and stimulate arms acquisition among the 'have-nots' just by defending their superiority. Nevertheless, unilateral disarmament or regional confidence-building can create trust and may instil a sense of assurance, spilling over into further rounds of arms control ('disarmament spill-over'). It is still too early to judge whether the disarmament of the 1990s will prove to be self-sustaining or will be reversed, as some indicators tend to suggest.

NEW MILITARY THREATS: NEW FORMS OF ARMS CONTROL

Many countries have started to reassess military threats and, consequently, the structure of their armed forces. The number of long-range military interventions has increased. Multilateral UN peacekeeping missions have moved to centre stage in the discussion of new and future military missions. Regional and internal wars have become the focus of attention. This has not only entailed preparation for such missions, but also required that the weapons primarily used in such wars—landmines, small arms and light weapons—be placed on the international arms control agenda.

Classical arms control, as it developed during the Cold War, has proved inadequate for the new situation. Clearly, the central problem in wars of today is not the lack of international stability but the destructiveness of the weapons and their enormous cost. The most prominent example of the emerging reorientation of arms control are the negotiations of the landmine convention: the practice of holding on to certain types or numbers of weapon systems by such countries as the United States, Russia, China and India is typical of classical arms control, but to the majority of countries who became party to the convention, this was unacceptable. 'Like-minded states' successfully negotiated the landmine treaty in a new forum, labelled the 'Ottawa process'. Civil society organizations—NGOs—became a new actor in arms control. The new combination of 'like-minded' governments and a diversified network of nationally or internationally operating NGOs who made this treaty possible is the only guarantee for compliance.

There is no reason to be over-enthusiastic. Many states—mine producers as well as mine users, from the United States to Yugoslavia, from Russia to Pakistan, from China to Burma—are not party to the convention. Even states who are party to the convention have continued to plant anti-personnel mines. Non-compliance is not punished. Certain types of mines which are dangerous to people are not prohibited. Moreover, additional research and development has been stimulated by the landmine treaty in order to circumvent its provisions. Whether similar treaties are attainable, for example in the area of small arms and light weapons, will be demonstrated by the *United Nations Conference on the Illicit Trade in Small Arms and Light Weapons in All Its Aspects*. At the beginning of the new millennium, small arms control has enormous scope for improvement. Yet the credibility of both exporting as well as importing countries could be improved if the present political declarations are underpinned by stricter regulations concerning the movements of small arms.

BICC findings: disarmament at a turning point?

Disarmament is easier than arms control. Each government can unilaterally decide to disarm and need not wait for arms control agreements. This is exactly what many states did during the second half of the 1980s and particularly during the 1990s and is confirmed by BICC's measure of

disarmament and the potential for conversion, the BICC Conversion, Disarmament, Demilitarization and Demobilization (BIC3D) Index. This gives a value of 30 for the world in 1999, indicating that military sectors had shrunk by 30% worldwide between the transition phase around the end of the Cold War and 1999.

Despite this historically unique reduction in arms, military forces are still enormous. Global military expenditures are estimated to have amounted to US \$686 billion in 1999 (in 1993 prices); the present stock of major conventional weapons is still over 422,000 pieces; 21.7 million military troops still serve in the world's armed forces; and almost 8 million employees work in the arms industry. Thus, almost 30 million people still earn their living directly and fully in the military sector.

Furthermore, high-risk strategies in the field of weapons of mass destruction are still applied.

Military expenditures—Growing again: After several years of decline, global military expenditures were on the rise again in 1999. This new development reverses a trend that has seen a drastic reduction in military expenditures and clearly signals a halt, or even a reversal, of disarmament and conversion. Although the majority of countries are still continuing to reduce their military expenditures, some of the bigger spenders such as the United States, France, Germany, China, Russia, Brazil and Australia increased or announced the growth of their expenditures in 1999–2000.

Military research and development—Anti-cyclical trends: Global expenditures on military research and development were not as strongly affected by the sharp decreases in the early 1990s as other parts of the budget. While military R&D expenditures in Russia were reduced dramatically, those in Western market economies only shrank slightly. During the period of reduced defence production in the 1990s, the development of new weapon technologies and weapon systems was prioritized to preserve technological capabilities. R&D seems to have done the job of bridging a period of reduced procurement. With the reversal in military expenditures described above, R&D efforts are slowing down. This could, in turn, mean new demand for conversion at military labs.

Industry restructuring and conversion—Continued internationalization at a higher level of production: After the rapid worldwide decrease in military production, there is now indication that the decrease has not only slowed down and stopped in recent years but might have already been reversed. At least in some of the major arms-producing countries, such as the United States, France, the United Kingdom, Russia and Japan, production has increased again. Unlike production, however, employment in the arms industry has continued to decrease. After a number of mega-mergers in previous years, particularly among the large arms companies in the United States, attention has now turned to international co-operation agreements and acquisitions. However, in the military sector, this process of globalization is much less advanced than in many other industrial sectors. While conversion and diversification of defence production continues in smaller companies without much public attention, larger companies tend to concentrate on their core defence business activities.

Demobilization and reintegration—The need for co-operation with other programmes: The number of soldiers world-wide has continued to decline for the tenth year running, although the process has also slowed down. From the peak of 28.8 million in 1987, it was down to 21.7 million in 1999. While some countries (Russia, Germany) have plans for further cuts in their armed forces, demobilization programmes are still ongoing in others, particularly as a result of post-war rationalization (as in Cambodia, East Timor and Sierra Leone). Similar programmes will be required if peace agreements are reached in other countries. Most post-war demobilization programmes are conducted simultaneously with, or as an integral part of, a more general reform of the security sector which includes the democratic control of the armed forces. In recent years, actors in development co-operation have recognized the fact that they can no longer exclude security issues, but must address them as part of a strategy for sustainable development.

Base closure and redevelopment—Long-term redevelopment tasks still ahead: The restructuring processes of armed forces worldwide have greatly reduced the number of military bases. This has been heavily concentrated on Europe as well as on a limited number of countries elsewhere (Australia, Panama, the Philippines, South Africa, the United States and Vietnam). A large array of bases freed by the military still need to be redeveloped, and new civil economic usage needs to be identified. Furthermore, it can be expected that additional rounds of force restructuring, rationalization or demilitarization processes will create new tasks for base redevelopment (for example in Germany, Northern Ireland, Russia, South Africa and the United States).

Surplus weapons—Political declarations have to be followed by action now: The slowing pace of nuclear disarmament has increased the risk of proliferation of all weapons of mass destruction. While the global market for new conventional arms shrank after the political changes of 1989–1990, the arms industry has been sustained by an expanded market for the upgrading of used weapons. From 1990 onwards, the total number of armoured vehicles, warships, missiles and military aircraft held by all states in the world fell continuously. By 1999, it was almost 30% lower. New initiatives to lessen the impact of contemporary wars, such as the campaigns against landmines and small arms, have had some success in their own terms. The issue has become high on the international policy agenda. Partly in response to the growing pressure from civil society, governments are increasingly addressing the threats to human security posed by small arms, but, in practice, political declarations have not yet been fully implemented.

Wars, conflicts and conflict resolution

The year 2000 saw several changes in wars and in conflict resolution—both for the better and for the worse. The United Nations engagement in solving conflicts, as well as the efforts by other international regional organizations, experienced both promising accomplishments as well as discouraging shortfalls. Positive and encouraging developments have now paved the way for a process of demilitarization, disarmament and conversion. On the other hand, a number of long-lasting wars and conflicts still continue. In such situations, there is little hope for peace settlements, and thus, at the end of 2000, also no prospect for disarmament, demilitarization and conversion.

In contrast to the ongoing conflicts (such as those in the Caucasus region particularly in the Russian region of Chechnya), Yugoslavia is getting back into the international community. The process of secessions and splitting-up of the country has come to a halt. While the war in Kosovo dominated the international debate in 1999, Yugoslavia turned from being a troubled spot to a place of hope, although not without problems. The security situation in and around Yugoslavia changed completely in 2000: immediate security threats decreased rapidly despite the problems related to autonomy aspirations in the region, including Bosnia-Herzegovina, Kosovo and Montenegro. With the improvements in this region, it seems that Southeast Europe's prospects for peace, security and development might now be more attainable.

The process in Northern Ireland has moved back and forth between a possible decisive breakthrough on the road to peace and the breakdown of the fragile co-operation between the parties of the conflict. During 2000, the debates and negotiations demonstrated the importance of the role of the 'arms issue', particularly in relation to small arms and light weapons. Disagreement on decommissioning the arms of the Irish Republican Army (IRA) was one of the stumbling blocs.

There is hope of improvement with regard to North Korea's role in the international community. For decades North Korea has been a source of concern because of its military ambitions. Steps have now been taken to resolve questions concerning North Korea's missile and nuclear programmes. The

government agreed to a temporary moratorium to their missile programme in 1999, but it is still unclear whether North Korea has given up its missile exports or not. Just as importantly, the complicated road to negotiations between North and South Korea was opened up in 2000.

While there had been great hope for a lasting peace between the people of Palestine and Israel after several rounds of negotiations, the process turned violent in the second half of 2000. The two adversaries called for a temporary freeze on most diplomatic contacts and the original Oslo Peace Agreements of 1993 and 1995 are far from being implemented, although no irrevocable steps have yet been taken.

The war between Eritrea and Ethiopia ended with a peace agreement in December 2000. Both governments are now prepared to negotiate their territorial disagreements. However, between 50,000 and 100,000 people died and millions of dollars' worth of military equipment and training were delivered to these two poverty-stricken African countries while the bloody war continued between them. A thorough process of demilitarization, disarmament and demobilization is now required to bring both countries back onto the road to sustainable development.

At the end of 2000, the volatile situation in Sierra Leone seemed under control after a period of turmoil and internal violence. Almost 13,000 UN peacekeepers and civilian police were based in the country, while the United Kingdom had over 400 troops there helping to restore law and order. Whether the situation will improve in 2001 or whether violence will spread again is an open question, given the roller-coaster experience in that country. The number of combatants willing to disarm will be an important factor. The war in Sierra Leone is the archetype of a conflict driven by greed, not grievance. Unfortunately, the diamond-funded rebels offer better material benefits to soldiers than government demobilization programmes. Economic interest in Sierra Leone's diamonds seems to be a never-ending source of renewed fighting and breach of peace agreements. International efforts to restrict the trade in 'blood diamonds' were strengthened in 2000, but it is difficult to control this commodity.

While the situation in Indonesia and neighbouring East Timor was of great concern at the end of 1999, it has now improved, although a number of regional aspirations for autonomy are still unresolved. While the fighting in East Timor has come to a halt, the situation still requires a strong UN peacekeeping presence. Almost 8,000 military peacekeepers and over 2,300 police and civilian personnel were based in East Timor in the Fall of 2000.

The tendency to opt for a military solution

It is popular now to call for a more human-centred approach to security. The security of the people rather than states should be the primary concern of security policy. In contrast to many such political declarations, the UN Secretary General's *Millennium Report* made it clear that wars in the 1990s 'have violated, not so much borders, as people'.¹ The world of power politics at the beginning of the new millennium—with the dangers posed by weapons of mass destruction still looming and the often-practised approach of military intervention—stands in stark contrast to such concepts of human security. The military is still often seen as the primary problem-solver.

Although international relations are no longer dominated by the animosity between the superpowers, the nuclear deterrence system still exists. Even at the operational targeting level, both Russia and the United States are still aiming their nuclear arsenals at each other. Many nations hold on to excessive conventional military capacities way beyond their legitimate security and defence needs. This is partly due to resistance to reform and inertia in the military sectors, but is also partly

because many governments still consider military solutions to be the primary alternative to diplomatic negotiations and political solutions. Although reliance on nationally based military security policy seems outdated in the age of globalization, many governments still hold on to such concepts.

At the same time, in many countries where the prospect of external aggression has been greatly diminished or is now non-existent, the traditional emphasis on self-defence as the primary function of the military has been called into question. Greater prominence is attached to other, secondary, functions such as international peacekeeping or peace-enforcement operations; humanitarian assistance and emergency aid in cases of natural disasters or war-related catastrophes (such as movements of large numbers of refugees); in combating drug trafficking, poaching and other forms of transnational crime undertaken by armed groups; internal intervention in politics or to combat separatism or calls for autonomy. However the tendency to emphasize non-core functions of the military can lead to 'mission creep' of the military, to unclear civil-military relations or even to reduced democratic control and the reduced accountability of the military.

Military intervention by the United Nations as a last resort cannot be ruled out completely. The international community has repeatedly discovered that 'no amount of good intentions can substitute for the fundamental ability to project credible force if complex peacekeeping ... is to succeed'². However, a number of armed interventions in the past were clearly not the option of last resort: not all channels of non-military intervention were tested before the military was called upon. On the other hand, states have not always been able to agree on intervention in cases of gross violation of human rights and genocide, as in the case of Rwanda in 1994.

The dilemma of when and where to intervene remains. Organized mass murder and gross violation of human rights require a decisive answer. However, even at the level of the United Nations, there has in practice been little consistency in military intervention. Weak states are subject to such interventions far more often than strong ones. The self-critical UN report on peacekeeping—labelled the Brahimi Report—not only proposes concrete measures to make United Nations peacekeepers fit for future tasks, it also includes a critique of member states which look for military 'quick fixes' without appropriately considering the long-term requirements for solutions to conflicts or giving the United Nations the necessary resources.

Conclusions: the road to revitalization of disarmament, arms control and security

This short analysis of arms control, disarmament, conversion, conflicts and military-based security policy illustrates that many states have been able to disarm without formal international agreement but often without giving up their military capability. However arms control agreements would have facilitated larger steps in disarmament; they could have prevented new rounds of armament and instability and built up confidence which, in turn, would have made it possible to sustain the dynamics of the disarmament process. Some of the enhanced functions of the military provide opportunities to make use of the know-how and equipment amassed in the military sector for genuine security purposes. On the other hand 'mission creep' of the military does not guarantee efficient and effective use of resources.

To revitalize arms control, disarmament and security, several areas seem particularly promising:

- **Controlling the role of the military in conflicts:** Elevating the functions of the military to peacekeeping, humanitarian assistance and other non-core tasks needs to be applied with great caution. Not each and every conflict requires a military answer. On the contrary, military intervention can be counterproductive and has indeed been so in a number of cases. The

argument for the need for an enhanced role of the military is sometimes used by the military in order to justify their existence and avoid substantial cuts to their budgets. Civilian leaders on the other hand are often motivated by humanitarian concerns and want to make use of the expertise of the armed forces. However, intensified roles of the armed forces can lead to wasted resources and a decrease in democratic control of the military. Thus, clear democratic control over such military intervention is necessary.

- **Strengthening the United Nations peacekeeping capacity:** Since much more is expected of the United Nations than simply providing a buffer between warring parties, the United Nations must be given the means to break the cycle of violence when called upon. The lack of political will on the part of UN member states to provide the necessary human, financial and material resources has been amply documented. At present, the United Nations cannot guarantee a real and sustained commitment to assist when needed. This situation can tempt unauthorized organizations to intervene—as in the case of the NATO in Kosovo in 1999. The United Nations charter must remain the basis for international peace operations.
- **Intensifying disarmament:** Arms control should aim at intensifying disarmament and making the trend sustainable. This is particularly pressing in the area of nuclear weapons. The aim must remain complete nuclear disarmament. The promises of the nuclear powers to eventually eliminate all nuclear weapons must be accompanied by deeds. In addition—and despite the new-found force levels in the 1999 Conventional Armed Forces in Europe (CFE) Treaty—substantial additional steps in conventional disarmament and arms control are possible.
- **Limiting technical modernization of weapons:** Arms control negotiations could aim to slow down the rapid process of modernization. This applies, for example, to new technologies of missile defence but also to conventional technologies. Policies of technological military dominance, as presently practised within NATO and particularly in the United States, have to give way to co-operative security strategies. The savings, in comparison to a new arms race, could make treaty limitations on technological development attractive.
- **Controlling small arms and light weapons:** A particularly promising area of arms control—in view of the casualties in predominant conflicts and wars—are the efforts to effectively control the proliferation of small arms and light weapons.
- **Reducing military expenditures:** There is almost no experience in negotiating the reduction of the direct cost of the military and arms. During the Cold War, suggestions for the reduction of military expenditures were made within the UN system. Surprisingly, these proposals have not been taken up again in recent years, although the present increased transparency in military expenditures would favour such an approach. Instead, the discussion within NATO is that the European allies allegedly spend too little on defence.
- **Implementing selective initiatives:** While it is important to have the major powers participate in arms control and disarmament, one should not rule out selective initiatives by ‘like-minded states’ if the major powers refuse to co-operate. It is not unusual that the signatures of important governments are missing on arms control treaties. The Ottawa Convention is not an exception. If the reduction of the destructiveness of weapons is the main goal, such initiatives could mean progress. Opportunities for ‘like-minded states’ to set new norms are high in the area of ‘humanitarian’ arms control.
- **Assisting disarmament financially and technically:** Increasing disarmament assistance is urgently required. Often the cost of disarmament is a decisive barrier to quick and complete implementation, for example, in the case of landmines and chemical weapons. Assistance is

being given by a number of states, however sums are minimal in comparison to the global total of military expenditures.

Now that rearmament seems to be on the agenda again in a growing number of countries, the importance of arms control and democratic control of the military is increasing. Reaffirmation of arms control and revitalization of civilian control over the military could act as a barrier to a new arms race and facilitate human security at a lower level of armaments and a lower level of military engagement.

This text is the introduction to the Conversion Survey 2001: Global Disarmament, Demilitarization and Demobilization by the Bonn International Center for Conversion (BICC). BICC documents and analyses worldwide disarmament and conversion efforts, including military demobilization and reintegration of ex-combatants and disposal of surplus weaponry. ISBN: 3-7890-7343-1

Notes

- 1 United Nations, *Report of the Secretary-General*, UN Document A/54/2000, paragraph 193, p. 31, New York, 2000.
- 2 United Nations, *Report of the Panel on United Nations Peace Operations*, UN document A/55/305 and S/2000/809 dated 21 August 2000, Executive Summary, p. 1.

Disarmament education resources

Compiled by Zhara MAHLSTEDT and Rebecca WEINER

Reaching Critical Will

<http://www.reachingcriticalwill.org>

Reaching Critical Will is an initiative that works to enhance the access, preparation and participation of non-governmental organizations in all disarmament fora. This disarmament initiative seeks, through education and imagination, to broaden the debate on the abolition of nuclear weapons. They have a page dedicated to the Group of Governmental Experts and post all relevant documents.

Global Campaign for Peace Education

<http://www.haguepeace.org>

The goals of the Global Campaign for Peace Education of the Hague Appeal for Peace are to build public awareness and support for peace education into all spheres of education throughout the world, to promote education of teachers, and develop and disseminate resources to teach for peace. Site contains information on the campaign, curriculum ideas, publications and links.

Educational Module on Chemical & Biological Weapons Nonproliferation

<http://cbw.sipri.se>

Link to the *Educational Module on Chemical & Biological Weapons Nonproliferation*. The module is an interactive tool that provides the user with an understanding of chemical and biological arms control, counter-proliferation and disarmament regimes.

The Critical Issues Forum

<http://cns.miis.edu/cns/edu/cif/index.htm>

The Critical Issues Forum (CIF) at the Center for Nonproliferation Studies, Monterey Institute of International Studies aims to increase awareness of disarmament and non-proliferation issues and to engage and recruit the next generation of non-proliferation specialists. CIF is designed to involve high school students and teachers in issues of proliferation and control of weapons of mass destruction. Site includes discussion groups, programme materials and resource links.

Center for Edu-Diplomacy

<http://www.edu-diplom.org>

The Center for Edu-Diplomacy uses technology to advance the skills such as science, math, vocational education and language arts, which are essential to post-war economies. In the process CED gives teachers the opportunity to learn with and about one another, across borders.

University of Bradford, United Kingdom <http://www.brad.ac.uk/acad/sbwtc/other/bw-info.htm>

This site from the Department of Peace Studies contains distance learning video modules on arms control, and includes links to papers related to this topic.

Campaign for Nuclear Disarmament <http://www.cndnuk.org>

UK pressure group for stimulating public debate on the need for alternatives both to the nuclear cycle and to military attempts to resolve conflict. CND seeks to educate people to work for a nuclear-free and peaceful future. Good set of basic fact sheets on nuclear issues available.

MidEast Web <http://www.mideastweb.org>

MidEast Web undertakes peace education projects and promotes dialogue and coexistence using the Internet. Good resource for links.

Peacequest <http://www.peacequest.org>

An oral history, peace education project that focuses on human stories behind the historical and political events in the Middle East. It presents a mosaic of experiences and perspectives on the Palestine-Israel conflict.

International Peace Bureau <http://www.ipb.org>

Homepage of the world's oldest peace federation, working to support peace initiatives of governments, the UN and citizens. Its disarmament programme page has good fact sheets on topical disarmament issues.

Peace Education <http://www3.igalaxy.net/~lauriec/Peace%20Ed.htm>

A personal site dedicated to peace education links established by a primary teacher in California. A good starting place for elementary educators.

Strengthening the Role of Regional Organizations in Treaty Implementation

UNIDIR, in collaboration with the Monterey Institute for International Studies, has undertaken a project that focuses on strengthening the role of regional organizations in non-proliferation and arms control treaty implementation. Regional organizations could play a significant role in addressing questions of compliance related to WMD agreements.

The project will be launched with a small workshop in Geneva to discuss the existing verification system for WMD treaties and the gaps that regional organizations could potentially fill. Based on the findings from the workshop, authors will be selected and a series of consultations will take place with diplomats (in Geneva, Vienna and the Hague), academics, officials from multilateral treaty-implementing organizations (such as IAEA, CTBTO, OPCW), and experts in the field of verification. Interviews with key experts on the operational capabilities and roles of their regional organizations will assist to round out the research.

The preliminary findings will be presented at an international meeting where academics, multilateral arms control and disarmament experts, non-governmental organizations, diplomats, and representatives from regional organizations and treaty-implementing organizations will be invited to discuss the papers. The Ploughshares Fund has generously contributed to the establishment of this project.

For more information, please contact:

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Visiting Fellowship Programme

UNIDIR is calling for applications for its 2002 visiting research fellowship programme on regional security. Four researchers will be invited to Geneva for a period of up to six months. The researchers will work collectively on a single research paper, focusing on a particular question of regional security. The visiting fellows programme aims to: contribute to debates on regional security;

provide training for researchers; allow them to interact with each other, with researchers from other regions, the UN Secretariat, delegations, international organizations and non-governmental institutes; and contribute to UNIDIR's research programme.

In 2002, the fellowships are reserved for researchers from the Middle East and the programme will focus on the Israeli-Palestinian conflict. The fellowships will be allocated on a competitive basis, taking due care to obtain national representation. The fellowship programme is scheduled to begin in January 2002. The closing dates for applications is 14 September 2001.

For more information, please contact:

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Tactical Nuclear Weapons

To support efforts to address and curb the problem of TNWs, UNIDIR has launched a long-term project that includes a series of seminars and publications as well as attempts to raise the problem of TNWs in the eyes of the wider public through the international media. Various aspects of this project are carried out in co-operation with the Monterey Institute of International Studies and the Peace Research Institute Frankfurt.

In March 2000, UNIDIR held a seminar in Geneva on TNWs. Experts from different institutions presented papers on various aspects of the issue. Recommendations drawn from this seminar were distributed to policy-makers at the 2000 NPT Review Conference.

UNIDIR recently published two research reports on TNWs: *Tactical Nuclear Weapons: Options for Control* and *Tactical Nuclear Weapons: A Perspective from Ukraine* (see publications section). A press conference on TNWs was held in Geneva on 23 January, which resulted in a number of newspaper articles as well as television and radio interviews.

UNIDIR's TNW project continues in 2001 with a study based on the recommendations presented in *Tactical Nuclear Weapons: Options for Control*. This report examines in detail and advances recommendations on codification as well as transparency and confidence-building measures related to the 1991 parallel unilateral declarations issued by the Presidents of the United States of America and the Russian Federation.

For the ten-year anniversary of the 1991 unilateral declarations UNIDIR will be holding a seminar at the United Nations Headquarters on 24 September.

For more information, please contact:

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Handbook on Verification and Compliance

Successful arms control in the Middle East—an essential component of the peace process—will require a thorough examination of the means to determine compliance and of the implications of regional verification mechanisms. In order to assist the process of ascertaining the necessary level and the approach to compliance monitoring in the Middle East, UNIDIR and VERTIC are producing a compendium of agreements and terms, in-depth analyses of approaches to verification, methods and technologies and practical experiences. The book will be published in English and Arabic in hard copy and electronic format (with hyperlink text).

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Fissile Materials

In April 1999, UNIDIR published *Fissile Material Stocks: Characteristics, Measures and Policy Options* by William Walker and Frans Berkhout. The publication is intended to support the Conference on Disarmament in its thinking on the range of options available to deal with stocks of fissile material. Additionally, UNIDIR has commissioned a report on fissile material inventories to provide an up-to-date account of fissile materials, assess national policies related to the production, disposition and verification of fissile materials, and identify facilities and locations which might be subject to safeguards under a treaty. In March 2001 UNIDIR in collaboration with the German Delegation to the Conference on Disarmament held a meeting on the verification of a fissile material cut-off treaty.

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Participatory Approaches to Evaluating the Implementation of Humanitarian Landmine Action

Evaluating mine action programmes in terms of cost-effectiveness and efficiency has its merits in a donor community concerned with value for money in project implementation. But humanitarian mine action is by definition a qualitative process. It is designed to enhance human security, provide victim assistance and encourage ownership of mine action programmes in affected communities and regions. Traditional evaluation and monitoring techniques do not readily lend themselves to assessments of such qualitative goals and objectives. Participatory monitoring and evaluation techniques (PM&E) are more appropriate to this task. PM&E involves key stakeholders in identifying their needs and assessing the most appropriate options for meeting those needs. Experience has shown that participatory approaches improve the quality, effectiveness and sustainability of donor programmes' actions and outcomes. By placing people at the centre of the monitoring and evaluation process, mine action efforts are guaranteed to empower local communities and encourage local ownership. The proposed pilot study is not only designed to pioneer PM&E approaches within the landmine community, but also to provide a unique opportunity for UNIDIR to help innovate bottom-up approaches to arms control implementation.

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The Costs of Disarmament

In order to present the cost-benefit analysis of disarmament, UNIDIR proposes to take key countries as examples and carefully research what their commitments to disarmament treaties mean to them in terms of financial and resource costs. In addition, the project will try to ascertain what each country perceives are the benefits brought to them through their participation in the agreements and whether there is consensus that there is a net gain to the state in question. The aim of the project is to achieve a better understanding of the costs and benefits of disarmament agreements with a view to assisting policy-makers decide how money is spent on such commitments, which budget lines are best structured to handle such spending and how states could approach this aspect of negotiations in the future.

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Peace-building and Practical Disarmament in West Africa

UNIDIR's West Africa project focuses on promoting the role of West African civil society in the fight against the proliferation of small arms and light weapons.

The project seeks to:

- Inform and raise awareness on the problem, notably security and humanitarian threats;
- Undertake locally based research with civil society groups and produce collaborative publications;
- Organize national and regional debates in West Africa to stimulate discussion on people-centred security and small arms proliferation;
- Build local capacities for peace and security research and light weapons monitoring regimes;
- Work for transparency and facilitate participation in decision-making and policy implementation;
- Enhance confidence-building and strengthen regional stability through community-based and cross-border arms control and peacebuilding; and
- Assist in the establishment of a culture of peace and disarmament.

The project operates in partnership with local non-governmental and community-based organizations. For the last two years the project has been working mainly in Sierra Leone and Liberia. For the coming two years, the project will enlarge its scope to Guinea, Côte d'Ivoire, Mali, Niger and Burkina Faso. Specific categories of people with high peacebuilding potential, such as women, young people, religious and traditional leaders, and the media, will be targeted as partners. Police forces and customs services will also be included.

Bound to Cooperate: Conflict, Peace and People in Sierra Leone, a publication of the project, is described in detail in the publication section.

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UNIDIR Handbook on Arms Control

UNIDIR is producing a handbook that will explain the major concepts and terms relating to arms control. The handbook will be used as both a primer for an audience with limited familiarity with arms control and as a reference for students, scholars, diplomats and journalists who are more experienced in arms control matters.

The handbook will be organized as a thematically structured glossary of approximately 400 terms relating to arms control. Each term is situated within its wider context so that, on the one hand, a specific term can be looked up quickly, and on the other hand, an entire issue can be covered. Cross-references to other terms and concepts will point the reader to relevant related issues. The researcher designing and drafting the handbook will be assisted by an editorial committee consisting of regional and arms control experts.

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Geneva Forum

Together with the Programme for Strategic and International Security Studies of the Graduate Institute of International Studies and the Quaker United Nations Office, UNIDIR organizes an ongoing discussion series called the Geneva Forum.

The Geneva Forum is an intellectual space in which expertise on a broad range of disarmament issues is shared among government delegates, United Nations personnel, NGOs and academics. Experts from various fields of disarmament are regularly invited to share their knowledge in briefings, seminars and workshops. Such meetings provide disarmament negotiators with valuable opportunities to benefit from in-depth research and to interact with one another in a relatively informal atmosphere. The issues dealt with in Geneva Forum meetings reflect the priorities of the disarmament agenda at any given time. The aim is to provide negotiators with relevant information that will assist them in their disarmament work.

Now in its third year, the Geneva Forum is expanding its work thanks to a generous grant from the Ford Foundation. New areas of activity will include increased networking between Geneva's disarmament, human rights and humanitarian communities in order to discuss mutual interests in security and disarmament issues and to explore possibilities for co-ordination and collaboration. Also, in recognition of the important role that public opinion plays in advancing disarmament, the Geneva Forum will intensify its interaction with international media covering disarmament issues in Geneva.

In 1998 and 1999, the Geneva Forum focused mainly on the issue of small arms and light weapons. The first volume of collected Geneva Forum papers on this subject has been published (see publications section).

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UNIDIR Disarmament Seminars

UNIDIR occasionally holds small, informal meetings on various topics related to disarmament, security and non-proliferation. These off-the-record gatherings allow members of the disarmament community, missions and NGOs to have an opportunity to discuss a specific topic with an expert. Recent topics covered include: verification of nuclear disarmament, restoring momentum to nuclear disarmament, missile defences, disarmament as humanitarian action, deadlock at the Conference on Disarmament, fissile materials, and next steps for nuclear disarmament and arms control. Speakers at recent meetings have included: Jonathan Dean, Daryl Kimball, Soren Jessen-Petersen, Martin Griffiths, Randall Forsberg, Rebecca Johnson, Tariq Rauf, Mutiah Alagappa, Graham Andrew, Anatoli Diakov, Annette Schaper, Tom Shea, Alain Munier, Seiichiro Noburu, Munir Akram, Thomas Markram, Christopher Westdal, Yuri Kapralov, Fu Zhigong, Robert Grey, William Potter, Lewis Dunn, Paolo Cotta-Ramusino and Harald Müller.

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DATARIs

In co-operation with SIPRI (Stockholm International Peace Research Institute), UNIDIR has developed an online database of disarmament, arms control, security and peace research institutes and projects around the world. The database can be accessed through UNIDIR's website and institutes can update their information via a password. A new feature allows the inclusion of the names of the director and research staff.

If you would like your institute to be included in DATARIs, please contact:

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PUBLICATIONS

Bound to Cooperate: Conflict, Peace and People in Sierra Leone

The chapters of this book wrestle with fundamental questions of practical disarmament and peace-building in Sierra Leone. Although they were written prior to the May-June 2000 upsurge of violence in Freetown that led to the arrest of Foday Sankoh, these incidents underline the relevance of the authors' analyses.

What links this series of research papers is the fact that all the authors are actors: they are Sierra Leonean civic leaders who are working for sustainable peace in their country. Each author is involved at one level or another in the search for a permanent peaceful resolution to the civil war, and a solution to the destabilizing influence of small arms and light weapons. In enabling these writers to get their views across, we hope to encourage a much-needed debate on security and security-sector reform in West Africa. We hope to enrich the understanding of Sierra Leone's partners and donors. In the long run, we believe that this partnership approach will shore up the peace builders, and contribute to sustainable peace across the whole region.

This is the first in a series of books designed to feed into the debate on sustainable peace, security and development in West Africa. The next book in the series will present a collection of papers from civil society actors in Liberia. Depending on funding, we will publish similar studies by civil society in other ECOWAS countries.

Background to the Conflict (1961–1991): What Went Wrong and Why?—*Joe A.D. Alie*

The Long Road to Peace: 1991–1997—*Abubakar Kargbo*

Bound to Cooperate: Peacemaking and Power-sharing in Sierra Leone—*Chris Squire*

Arms Smuggling in Post-War Sierra Leone—*Nat J.O. Cole*

Arms Regulation—*J.P. Chris Charley*

Arms Control Policy Under Threat: Dealing with the Plague of Corruption—*Abdulai Bayraytay*

Peace by Other Means: The Missing Link in DDR Programmes—*Michael Foray*

Disarmament, Demobilization and Reintegration in Post-War Sierra Leone—*Francis Kai-Kai*

Community-Based Disarmament and Post-Conflict Peace-building—*Isaac Lappia*

Women Against Weapons: A Leading Role for Women in Disarmament—*Binta Mansaray*

A Price for Peace? Justice and Reconciliation in Post-War Sierra Leone—*Joe A.D. Alie*

Anatole Ayissi and Robin-Edward Poulton

Editors

Sales number GVE.00.0.20

Tactical Nuclear Weapons: Options for Control

At the end of the Cold War, it was well understood that tactical nuclear weapons, which were forward-based and integrated with conventional forces, were a particularly dangerous category of nuclear weapons. A great deal of uncertainty remains today over the implementation of the 1991 unilateral declarations.

Since 1999, the spectre of tactical nuclear weapons has again been raised as a serious concern. The culminated response by Russia to NATO enlargement, the conflict over Kosovo, and United States proposals to modify the Anti-Ballistic Missile Treaty, thus allowing national missile defences, has led to renewed interest in tactical nuclear weapons in Russia and to calls to remanufacture or modernize the existing tactical nuclear force within the near future. In addition, regional nuclear weapons developments, particularly in South Asia following the nuclear weapons tests by India and Pakistan in 1998, have fostered concerns over the deployment of tactical nuclear weapons in Asia and the Middle East.

It is clear, particularly when considering the possession of nuclear weapons by States other than the *de jure* nuclear weapon states, that the definitions of tactical nuclear weapons are inadequate. If strategic nuclear weapons are defined in terms of the capability and mission to hit the heart of an adversary's homeland, then the range of these weapons is not always the key factor in their definition, neither is the explosive yield. In the United States-Russia dialogue on such weapons however, geographical range has been the overriding feature in attempts to delineate tactical from strategic. A number of critics argue that the subdivision of nuclear weapons into strategic and tactical is not as useful as treating all nuclear weapons collectively. Others feel strongly that the particular dangers of tactical nuclear weapons, with regard to their missions, command and control, are sufficient to warrant their separate and urgent treatment.

There is also the debate about the role of tactical nuclear weapons beyond the national boundaries of the possessor states, focusing much attention on tactical nuclear weapons in NATO Europe and on NATO doctrine. The large numerical superiority of Russian deployed tactical nuclear weapons and recent changes in Russian nuclear weapons doctrine was cause for increasing concern. A number of approaches to dealing with the tactical nuclear weapons issue are outlined in this book. It is hoped that these proposals will add value to the discussions and debates.

Harald Müller is Executive Director at the Peace Research Institute Frankfurt, Germany, where Annette Schaper is a Senior Associate in the Arms Control and Disarmament Group. William C. Potter is the Director of the Center for Nonproliferation Studies and the Center for Russian and Eurasian Studies at the Monterey Institute of International Studies, United States. Nikolai Sokov is also at the Center for Nonproliferation Studies.

Harald Müller, Annette Schaper, William C. Potter and Nikolai Sokov

Sales number GV.E.00.0.21

Tactical Nuclear Weapons: A Perspective from Ukraine

After a decade in the background, the question of tactical nuclear weapons (TNWs) in Europe has begun to raise concern among politicians and the public. Although the problems of today are not as dramatic as those of the Cold War, when the threat of TNW use was ever present, TNW remain a cause for concern and must be addressed. The approaches used during the Cold War are no longer effective and new ones have not yet been devised.

This study is concerned with the present and future role of TNW in the new European security system as seen from Ukraine, a country which once had the world's third largest nuclear arsenal stationed on its territory.

The study is the work of a team of researchers at the Dnipropetrovsk Branch of the National Institute for Strategic Studies led by Professor A. Shevtsov. A. Shevtsov writes on the problems that faced Ukraine in choosing the non-nuclear alternative. A. Gavrish contributes the analysis of the situation with regard to the tactical nuclear weapons possessed by NATO countries. A. Chumakov provides the corresponding analysis of the Russian arsenal. A. Yizhak presents the prospects for nuclear disarmament.

Tactical Nuclear Weapons in Europe: History of Deployment

Renunciation of Nuclear Weapons: The History of Ukraine

Tactical Nuclear Weapons in the New European Security System: To Be or Not To Be?

Prospects for Reducing the Role of Tactical Nuclear Weapons in Europe

A. Shevtsov, A. Yizhak, A. Gavrish and A. Chumakov

The Geneva Forum: Seminars on Small Arms, Vol. 1

Since 1997, the Quaker United Nations Office, the Programme for Strategic and International Security Studies of the Graduate Institute of International Studies, and the United Nations Institute for Disarmament Research have collaborated in bringing expert presentations on issues in contemporary arms control and disarmament to the international community in Geneva. These presentations have been addressed to the members of the diplomatic missions in Geneva, and our goal has been to offer high-quality analytical perspectives on contemporary issues in a “user friendly” format related to the policy development needs and possibilities of this particular community.

The focus of the Geneva Forum in 1998 and 1999 was the issue of small arms and light weapons. In this small volume, the reader will find the summary results of the seminars that were held between May 1998 and November 1999. We hope, through this volume, to reinforce the experts’ presentations by making them available to a wider audience.

Introduction

Conventional Arms Transfers: Surplus Weapons and Small Arms — *Herbert Wulf*

Illegal Arms in Albania and European Security — *Chris Smith*

Weapons: A Question of Health? — *Robin M. Coupland & David Meddings*

The International Commission of Inquiry (Rwanda) — *Eric Berman*

The United Nations and Small Arms: The Role of the Group of Governmental Experts —
Ambassador Mitsuro Donowaki, Ms Graciela Uribe de Lozano & Ambassador André Mernier

Monitoring the Flow, Availability and Misuse of Light Weapons: A New Tool for the Early Warning of Violent Conflict — *Dr. Edward J. Laurance*

The Norwegian Initiative on Small Arms Transfers: West Africa and Beyond — *Mr. Ole-Petter Sunde*

War, Peace and Light Weapons in Colombia: A Case Study — *Mr. Daniel García-Peña Jaramillo*

Quaker United Nations Office, the Programme for Strategic and International Security Studies of the Graduate Institute of International Studies and the United Nations Institute for Disarmament Research

Editors

Peacekeeping in Africa: Capabilities and Culpabilities

African regional and subregional organizations have an important role to play in the promotion of peace and security on their continent. The United Nations Security Council has relied on them excessively, however, in large part because it has been reluctant to authorize United Nations peacekeeping operations. Although there is merit to strengthening indigenous capabilities, the issue of whether Africans are prepared for the challenge of assuming primary responsibility for responding to conflicts is another matter. What can African states and organizations do to enhance their peacekeeping capabilities? How can the international community better tailor its initiatives to the needs of African actors? This book answers such questions.

Part I of this book describes challenges to African peace and security and discusses the reasons why the United Nations Security Council has changed its peacekeeping policy. Part II examines African attempts to manage and resolve conflicts on their continent. Part III reviews African peacekeeping experience outside of African regional, subregional and ad hoc initiatives. Part IV describes and analyses efforts made by non-African states to address the deficit. The study concludes with a series of recommendations on how to make current approaches more effective. It provides concrete suggestions for strengthening African regional and subregional efforts and for improving Western capacity-building programmes. It also emphasizes that the United Nations must assume a greater role in both promoting and undertaking peacekeeping on the African continent.

Preface by the Secretary-General

PART I Setting the Stage

PART II African Organizations and Ad Hoc Initiatives

PART III Understanding African Peacekeeping Abilities and Limitations

PART IV Efforts to Develop African Capacities

Conclusion

Annexes and Selected Bibliography

Eric Berman and Katie Sams

ISBN 92-9045-133-5

Sales number GVE.00.0.4

The Small Arms Problem in Central Asia: Features and Implications

Although Central Asia has been seriously afflicted by the proliferation, accumulation and misuse of small arms, the region has been largely ignored by the international community. This report attempts to highlight the gravity of the situation in the region by describing the ways in which the small arms problem manifests itself within the Central Asian context. The study specifically focuses on the following issues: the factors generating demand for small arms; the external and internal sources of small arms; the routes through which arms and ammunition are transferred; the various types of small arms in circulation; the humanitarian, political and societal implications of small arms; and finally, the factors hampering the efforts to combat the small arms problem. The study concludes with remarks on the impact of small arms in Central Asia and on possible approaches for their control.

Afghanistan: Two Decades of Armed Conflict

The Cold War Legacy

Small Arms and the Taliban Ascendancy

The Human Costs of Small Arms

The Conflict in Tajikistan

The Civil War 1992–1997

The Sources of Small Arms

The Fragile Peace

Uzbekistan, Kyrgyzstan, Kazakhstan and Turkmenistan: Small Arms and Latent Threats to Stability

Weaponized Societies

Potential Sources of Armed Internal Conflict

Bobi Pirseyedi

ISBN 92-9045-134-3

Sales number G.V.E.00.0.6

West Africa Small Arms Moratorium: High-Level Consultations on the Modalities for the Implementation of PCASED

*A report of the Experts' Meeting and the Civil Society Meeting
23–24 March 1999, Bamako, Mali*

Recognizing the threats to national security posed by the proliferation of small arms and light weapons, West African States have sought to address the issue through a subregional grouping, the Economic Community of West African States (ECOWAS). Inspired by the “security first” approach, on 31 October 1998, in Abuja, all sixteen ECOWAS member states signed the *Declaration of a moratorium on the importation, exportation and manufacture of light weapons in West Africa*.

The Moratorium — commonly known as the West African Small Arms Moratorium — entered into force on 1 November 1998, for a renewable period of three years. This Moratorium is an innovative approach to peace-building and conflict prevention. It is not a legally binding regime but rather an expression of shared political will. In order for the Moratorium regime to be effective, concrete measures need to be adopted to ensure that West African governments remember this political commitment and to mobilize national, regional and international support for its implementation. Located in Bamako, the Programme for Coordination and Assistance for Security and Development (PCASED) is the designated implementation mechanism for the Moratorium.

On 23 and 24 March 1999, ECOWAS, the UN Development Programme and the UN Regional Centre for Peace and Disarmament in Africa hosted high-level consultations with West African and small arms experts to elaborate the modalities for the implementation of PCASED. This report outlines the various discussions that took place within both the Experts' Meeting and the Civil Society Meeting about these priority areas.

Jacqueline Seck

United Nations Institute for Disarmament Research
United Nations Regional Centre for Peace and Disarmament in Africa

GE.00-00475
UNIDIR/2000/2

Small Arms Control: Old Weapons, New Issues

The twenty-nine papers collected in this volume were originally prepared for four regional workshops organized by the United Nations Department for Disarmament Affairs to inform the work of the United Nations Panel of Governmental Experts on Small Arms. These workshops were held during 1995–96. Most of the papers were updated in 1998. Authors include academic, military, governmental and activist experts.

The editorial committee consisted of: Jayantha Dhanapala, Under-Secretary-General for Disarmament Affairs, United Nations; Mitsuro Donowaki, Ambassador and Special Assistant to the Minister for Foreign Affairs of Japan; Swadesh Rana, Chief, Conventional Arms Branch, Department for Disarmament Affairs, United Nations; and Lora Lumpe, Senior Researcher for the Norwegian Initiative on Small Arms Transfers (NISAT) at the International Peace Research Institute, Oslo (PRIO).

The publication is divided into four parts:

Causal Factors and Policy Considerations

The Problem of Small Arms and Light Weapons in Africa

The Proliferation of Small Arms and Light Weapons in Latin America and the Caribbean

The Plague of Small Arms and Light Weaponry in South Asia

Jayantha Dhanapala, Mitsuro Donowaki, Swadesh Rana and Lora Lumpe

Editors

UNIDIR/Ashgate publication
ISBN 0-7546-2076-X

Fissile Material Stocks: Characteristics, Measures and Policy Options

In 1998, on the basis of the Shannon Mandate, the Conference on Disarmament (CD) established an ad hoc committee for negotiating a fissile materials treaty. The treaty is intended to achieve a ban on the production of fissile materials for military purposes in a non-discriminatory, multilateral and internationally verifiably manner. Stocks of fissile materials have accrued transnationally due to armament and disarmament processes, as well as to civil uses of nuclear power. However, very little is known in the public domain about the nature, size and whereabouts of such stocks, and the complexities surrounding their regulation and control. UNIDIR's report on fissile material stocks seeks to begin to redress this problem by providing factual background information on all of these important matters. The report categorizes and quantifies fissile material stocks, and examines the measures which have heretofore been developed regarding their control and management. The report also includes an overview of broad policy options available to states in addressing the stocks issue, which could prove valuable in informing negotiations in the CD.

Fissile material stocks: function, scale and distribution

Characterization by type of inventory

The scale, type and location of fissile material stocks

Measures relating to fissile material stocks: recent developments

Military inventories: continuing absence of international regulation

Transitional inventories: towards regulation and disposition

Civil inventories: the extension of transparency

Policy strategies and options

Stocks and the FMT: possible diplomatic approaches

Possible measures for reducing risks posed by fissile material stocks

Fissile materials and their production processes

International safeguards and physical protection

William Walker and Frans Berkhout

Sales no. G.V.E.99.0.15
ISBN 92-9045-131-9

Sensors for Peace

United Nations peace operations have a tradition of several decades, and their scope and importance has increased markedly since the end of the Cold War. Peacekeeping operations, both of the traditional and the extended type, comprise monitoring tasks as a central part of their mandates. Agreements or resolutions, whether they demand withdrawal behind a cease-fire line, keeping a buffer zone demilitarized, or banning heavy weapons in control zones or safe havens, require that compliance is checked reliably and impartially. The more comprehensive the monitoring, the more likely the compliance. In practice, however, monitoring duties often require the surveillance of such large areas that United Nations peacekeeping units cannot provide continuous coverage. Thus, peacekeeping personnel are permanently deployed only at control points on the roads or areas deemed most sensitive. Minor roads and open terrain are covered by spot-check patrols. This creates many opportunities for infractions and violations.

Unattended ground sensor systems allow all this to change. Unattended ground sensors are suited to permanent, continuous monitoring. They can be deployed at important points or along sections of a control line, sense movement or the presence of vehicles, persons, weapons, etc. in their vicinity and signal an alarm. This alerts peacekeepers in a monitoring centre or command post, who can send a rapid-reaction patrol immediately to the site to confront the intruders, try to stop them, or at least document the infraction unequivocally.

Unattended ground sensor systems generally have not been used in peace operations. Thus, the wider introduction of unattended ground sensor systems in future United Nations peace operations requires fresh study from operational, practitioner, system design and legal perspectives. *Sensors for Peace* is an excellent first look at this timely issue.

Introduction — *Jürgen Altmann, Horst Fisher & Henny J. van der Graaf*

The Use of Unattended Ground Sensors in Peace Operations — *Henny J. van der Graaf*

Questionnaire Answers Analysis — *Willem A. Huijssoon*

Technical Potentials, Status and Costs of Ground Sensor Systems — *Reinhard Blumrich*

Maintaining Consent: The Legality of Ground Sensors in Peace Operations — *Ralph Czarnecki*

Conclusions and Recommendations — *Jürgen Altmann, Horst Fisher & Henny J. van der Graaf*

Jürgen Altmann, Horst Fischer and Henny J. van der Graaf

Editors

Sales No. GVE.98.0.28

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Non-Offensive Defence in the Middle East?

Non-offensive defence (NOD) emerged as a proposed remedy to the military security problems of East and West during the latter part of the Cold War. Grounded in the notion of “cooperative security”, NOD is premised on the postulate that states in the international system are better off pursuing military policies which take account of each other’s legitimate security interests than they are in trying to gain security at each others’ expense. Competitive military policies which seek to achieve national security through a build-up of national military means, may well be counter-productive and leave states more insecure. Seeking to procure national military security through a build-up of national armaments raises suspicions as to the purpose of these armaments, which in turn trigger countervailing armament efforts which ultimately lower the level of security for all. By making the defence of domestic territory the sole and clear objective of national military policies, NOD aims to strike a balance between the imperatives of ensuring adequate national military security and of avoiding provocation.

NOD aims towards national military defences strong enough to ensure adequate national military security, but not strong enough to be seen as threatening by others. The provision of adequate yet non-threatening military defence can be highly useful in a region such as the Middle East where political and military confrontations are inextricably linked, and where political settlement in the absence of military security is inconceivable. In the Middle East, NOD could reduce prevailing military tensions and open the way for broader political arrangements on the future of the region.

The introduction of NOD in the Middle East would not require that all Middle Eastern states adopt the same NOD model. Rather, each Middle Eastern state can select the particular NOD model most suitable to its requirements.

Non-Offensive Defence in the Middle East — *Bjørn Møller*

Non-Offensive Defence in the Middle East: Necessity versus Feasibility — *Ioannis A. Stivachtis*

Cooperative Security and Non-Offensive Defence in the Middle East — *Gustav Däniker*

Non-Offensive Defence and its Applicability to the Middle East: An Israeli Perspective —
Shmuel Limone

Bjørn Møller, Gustav Däniker, Shmuel Limone and Ioannis A. Stivachtis

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A Peace of Timbuktu: Democratic Governance, Development and African Peacemaking

Mali is admired for two recent accomplishments. The first is the country's transition to democracy, which took place in 1991–1992. This effort included the overthrow of Moussa Traoré's twenty-three year military dictatorship on 26 March 1991 — a process of military and civilian collaboration which fostered national reconciliation, a referendum for a new constitution, and elections which brought to power Mali's first democratically elected president, government and legislature. The second achievement is the peacemaking between the Government of Mali and the rebel movements in the northern part of the country: this process successfully prevented the outbreak of civil war and presents useful lessons in preventive diplomacy for the international community. The peacemaking culminated in a ceremony known as the Flame of Peace, when rebel weapons were incinerated in Timbuktu on 27 March 1996. This study of the events surrounding the uprisings in the North of Mali and the measures which restored peace (and those which will maintain it) is the result of a collaboration between the United Nations Development Programme and the United Nations Institute for Disarmament Research.

This peace process was remarkable for the way in which the United Nations agencies were able to help, discreetly dropping oil into the machinery of peacemaking. For a cost of less than \$1 million, the United Nations helped the Malians to avoid a war, and lit the Flame of Peace. With less than \$10 million, the United Nations became the leading partner of Mali's Government and civil society, in peace-building, disarming the ex-combatants and integrating 11,000 of them into public service and into the socio-economy of the North through a United Nations Trust Fund. The experience shows that not only is peacemaking better than peace-keeping, but that it is much cheaper.

A Peace of Timbuktu includes in-depth coverage of the following topics:

- Mali's History and Natural Environment
- The Build-up to the Crisis in Northern Mali
- The Armed Revolt 1990–1997
- Peacemaking and the Process of Disarmament
- The International Community as a Catalyst for Peace
- Ensuring Continued Peace and Development in Mali
- The Flame of Peace Burns New Paths for the United Nations

United Nations Secretary-General Kofi Annan has written the preface. The book includes maps, texts of relevant documents and laws, and a bibliography, as well as photographs by the authors and peace drawings by the children of Mali.

Robin Edward Poulton and Ibrahim ag Youssouf

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G.V.F.98.0.3

The Implications of South Asia's Nuclear Tests for Non-proliferation and Disarmament Regimes

On 7 and 8 September 1998, UNIDIR held a private, off-the-record meeting on *The Implications of South Asia's Nuclear Tests for the Non-proliferation and Disarmament Regimes*. This "track one and a half" meeting was designed to address the needs of policy-makers — governmental and non-governmental agents — in their assessment of the impact of the nuclear-weapons tests carried out by India and Pakistan in May 1998. The governments of Australia, Denmark, Italy, Norway, New Zealand and the United States generously sponsored the meeting.

More than fifty people from over twenty-five countries attended the conference. Each participant attended in his or her personal capacity as an expert and not as a representative of a country or a NGO. At the end of this two-day meeting, there was general agreement among participants that neither India nor Pakistan had enhanced its own security or international status by conducting the tests, but that the risk of nuclear war in the region is now greater. Also, it was recognized that the NPT and the CTBT had been in difficulty prior to the tests, although they remained the best solutions available to reduce potential for further conflict and therefore remained crucial. Finally, many participants expressed their concern that if India and Pakistan were rewarded in any way for demonstrating their nuclear capabilities, this may cause some NPT members to reassess their membership in the regime.

International response to the nuclear tests in South Asia was inadequate: there is a need for more coherent and collective action. Participants focused on practical suggestions to policy-makers to reduce the risk of war; to save the non-proliferation and nuclear arms control regimes; and to anticipate the effects of the tests on areas of regional tensions, particularly the Middle East.

The Responses to the Tests

Causes of the Tests

Consequences of the Tests

Regional Security

Consequences for Non-Proliferation and Disarmament

Damage Limitation

Developing the Non-Proliferation and Disarmament Agenda

Conclusions and Policy Options

Main Summary

Prevention of Nuclear War

Saving the Non-Proliferation and Arms Control Regimes

The Effects on Regional Tensions, Especially in the Middle East

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Additional UNIDIR publications

Building Confidence in Outer Space Activities, Péricles Gasparini Alves, ed., 1995, ISBN 1855216302, published for UNIDIR by Dartmouth (Aldershot)

Curbing Illicit Trafficking in Small Arms and Sensitive Technologies: An Action-Oriented Agenda, Péricles Gasparini Alves and Daiana Belinda Cipollone, eds., 1998, Sales No. GV.E.98.0.8, also available in Spanish, GV.S.98.0.8

Evolving Trends in the Dual Use of Satellites, Péricles Gasparini Alves, ed., 1996, Sales No. GV.E.96.0.20, ISBN 92-9045-115-7

The Fissile Material Cut-Off Debate: A Bibliographical Survey, Daiana Cipollone, 1996, Sales No. GV.E.96.0.30.

Increasing Access to Information Technology for International Security, Péricles Gasparini Alves, ed., 1997, Sales No. GV.E.97.0.23

National Threat Perceptions in the Middle East, by James Leonard, Shmuel Limone, Abdel Monem Said Aly, Yezid Sayigh, the Center for Strategic Studies (University of Jordan), Abdulhay Sayed and Saleh Al-Mani, 1995, Sales No. GV.E.95.0.24.

Nuclear-Weapon-Free Zones in the 21st Century, Péricles Gasparini Alves and Daiana Belinda Cipollone, eds., 1997, Sales No. GV.E.97.0.29, also available in Spanish, Sales No. GV.S.97.0.29

The Transfer of Sensitive Technologies and the Future of Control Regimes, Péricles Gasparini Alves and Kerstin Hoffman, eds., 1997, Sales No. GV.E.97.0.10

Verification of a Comprehensive Test Ban Treaty from Space — A Preliminary Study, Bhupendra Jasani, 1994, Sales No. GV.E.94.0.30.

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