Nuclear Proliferation and International Security

Edited by
Morten Bremer Mærli and Sverre Lodgaard
Nuclear Proliferation and International Security

The nuclear Non-proliferation Treaty (NPT) is the backbone of international efforts to prevent the spread of nuclear weapons, and the only treaty obliging all member states to work for the elimination of such arms. In retrospect, and despite setbacks, the overall impact of the NPT has been significant and gratifying. However, its continued success is by no means guaranteed. Nuclear weapons remain an essential part of the security policies of leading states; other countries entertain nuclear weapon options; and some non-state actors have taken an active interest in the acquisition of nuclear capabilities. In search of an overarching strategy that recognizes both the flaws of the existing non-proliferation regime and the value of some of the alternatives proposed by regime critics, this volume assesses contemporary efforts to stem proliferation. In doing so, the book examines a number of cases and issues with a view to recommending improved non-proliferation tools and strategies. The contributors comprise renowned international scholars, who have been selected to obtain the best possible analyses of critically important issues related to international proliferation dynamics and the future integrity of the NPT.

Dr Morten Bremer Mærli is Senior Researcher at the Norwegian Institute of International Affairs. Dr Sverre Lodgaard is Director of the Norwegian Institute of International Affairs.
1 Nuclear Proliferation and International Security
Edited by Morten Bremer Mærli and Sverre Lodgaard
Nuclear Proliferation and International Security

Edited by Morten Bremer Mærli and Sverre Lodgaard
We can’t solve problems by using the same kind of thinking we used when we created them.

(Albert Einstein)
## Contents

*Contributors*  
ix  
*Foreword by Hans Blix*  
xiv  
*Preface*  
xix  
*Abbreviations*  
xxi  

1 **Introduction**  
1  
MORTEN BREMER MÆRLI AND SVERRE LODGAARD  

**PART I**  
Growing pressures, fragile policies  
7  

2 **Ban on nuclear-weapon proliferation in light of international law**  
9  
JOZEF GOLDBLAT  

3 **Preventive war as an alternative to treaty-based nuclear non-proliferation**  
30  
ASTRID FORLAND  

4 **Proliferation, disarmament and the future of the Non-proliferation Treaty**  
50  
STEVEN E. MILLER  

**PART II**  
Encountering proliferators, real or potential  
71  

5 **The exceptional end to the extraordinary Libyan nuclear quest**  
73  
HARALD MÜLLER
Contributors

**Dr Astrid Forland** holds a professorship in modern Norwegian and international history at the University of Bergen, Norway. In her doctoral thesis, entitled *Negotiating Supranational Rules: The Genesis of the International Atomic Energy Agency Safeguards System*, she analyses multilateral negotiations relating to the creation of international nuclear safeguards. Forland has also written extensively on university history and the history of science. Currently deputy dean of research at the Faculty of Humanities, University of Bergen, she has previously worked with the Norwegian Ministry of Foreign Affairs and the United Nations Institute for Disarmament Research. E-mail: astrid.forland@hi.uib.no.

**Jozef Goldblat** holds university degrees in international relations, law, economics and linguistics. He is Vice-president of the Geneva International Peace Research Institute and Resident Senior Fellow at the United Nations Institute for Disarmament Research in Geneva. He lectures on topics including truce supervision, the arms race and disarmament problems, and has published extensively on these issues. From 1969 to 1989 he directed the arms control and disarmament research programme at the Stockholm International Peace Research Institute (SIPRI). Goldblat has been honoured several times in recognition of his scholarship in disarmament and arms control, most recently in 2006, when he received the GCSP (Geneva Centre for Security Policy) award for his achievements in the field of international and human security. E-mail: goldblat@consultant.com.

**Dr Peter Hayes** is Professor of International Relations, Royal Melbourne Institute of Technology, and Executive Director of the Nautilus Institute for Security and Sustainable Development in San Francisco. The holder of a doctorate from the University of California at Berkeley, he is the author of many studies and books, especially concerning the nexus of security, environment and energy policy problems. Best known for innovative cooperative engagement strategies in North Korea, he has developed techniques at the Nautilus Institute for seeking near-term solutions to global security and sustainability problems and applied them in Australia and Asia. Hayes has worked with the United Nations Environment Programme, the United Nations Development
Contributors

Programme, the Asian Development Bank, the World Bank, the Canadian International Development Research Council and the United States Agency for International Development. E-mail: peter@nautilus.org.

Sverre Lodgaard has been Director of the Norwegian Institute of International Affairs (NUPI) since 1997. He has served as Director of the United Nations Institute for Disarmament Research (UNIDIR), Geneva, as Director of the International Peace Research Institute, Oslo, and as Director of European Security and Disarmament Studies at the Stockholm International Peace Research Institute (SIPRI). Lodgaard has been a member of the UN Secretary General’s Advisory Board on Disarmament Matters and of the International Pugwash Council. He is currently chairman of the International Advisory Board of the Bonn International Centre for Conversion, member of the Council of the University for Peace and deputy member of the Norwegian Nobel Committee. A political scientist by training, Lodgaard has focused on security policy, arms control and disarmament issues, the relationship between security and development, the role of the UN, and peace operations in his research. E-mail: sl@nupi.no.

Lieutenant General Talat Masood served in the Pakistani Army for thirty-nine years, retiring in 1990 as Secretary for Defence Production in the Ministry of Defence. Prior to this, Lieutenant General Masood was chairman and chief executive of the Pakistan Ordnance Factories Board, where he oversaw the modernization and expansion of military technologies. Since retirement, he has been closely associated with think-tanks and universities regionally and globally, working to promote peace and stability in the region. He is a visiting fellow at the Stimson Center in Washington, DC. A graduate of the Pakistan Command and Staff College and the National Defence College of the Armed Forces, Lieutenant General Masood has a Bachelor’s degree in mechanical engineering and a Master’s in defence and strategic studies. E-mail: talat@comsats.net.pk.

Dr Morten Bremer Mærli is a senior research fellow at the Norwegian Institute of International Affairs (NUPI). From 1995 to 2000 he served at the Norwegian Radiation Protection Authority, with control and protection of nuclear materials in north-west Russia as his main area of responsibility. Bremer Mærli has been a Fulbright Science Fellow at the Center for International Security (CISAC) at Stanford University and a visiting research scholar at Sandia National Laboratories, California. His doctoral work dealt with nuclear terrorism and best threat reducing strategies. He holds an MSc degree in nuclear physics and a BA degree in risk communication and perceptions of the risk of radiation. He has served as technical consultant to the Norwegian Ministry of Foreign Affairs, inter alia at the 2000 NPT Review Conference. He is the author of the monograph Atomterrorisme (1999, in Norwegian). E-mail: mbm@nupi.no.

Dr Marvin Miller received a PhD in applied physics in 1967 and joined the Nuclear Engineering Department (NED) at the Massachusetts Institute of
Technology in 1974, where his research focused on nuclear proliferation and the environmental impacts of energy use. He has also worked on such issues as engaging Israel, India and Pakistan more fully in the global non-proliferation regime; the proliferation implications of the education and training of foreign nationals at US universities; and the linkage between nuclear power and nuclear proliferation. Although Dr Miller has retired from the NED, he remains a research affiliate with MIT, where he continues his studies on nuclear proliferation and energy. He is the author of over 100 publications, and has been a consultant to several national laboratories in the United States, the US Departments of State and Energy and the International Atomic Energy Agency. E-mail: marvmill1@verizon.net.

Dr Steven E. Miller is Director of Harvard University’s International Security Program, editor-in-chief of the quarterly journal *International Security* and also co-editor of the book series of Harvard’s International Security Program. He has been a senior research fellow at the Stockholm International Peace Research Institute (SIPRI) and has lectured on defence and arms control studies at the Massachusetts Institute of Technology. He is co-author of the monograph *War with Iraq: Costs, Consequences, and Alternatives* (2002) and editor or co-editor of some two dozen books. Miller was named to the 2006 Class of Fellows of the American Academy of Arts and Sciences. He is also co-chair of the US Pugwash Committee, member of the Council of International Pugwash, and member of the Advisory Committee of SIPRI. He holds a PhD in international relations from the Fletcher School of Law and Diplomacy. E-mail: steven_miller@harvard.edu.

Dr C. Raja Mohan is Professor at the Rajaratnam School of International Studies, Nanyang Technological University, Singapore. Earlier he was Strategic Affairs Editor of the *Indian Express* (New Delhi). Prior to that, he was Professor of South Asian studies at Jawaharlal Nehru University, New Delhi. He also served as senior fellow at the Institute for Defence Studies and Analyses, New Delhi. He holds a Master’s degree in nuclear physics and a PhD in international relations from Jawaharlal Nehru University. Dr Mohan served on India’s National Security Advisory Board from 1998 to 2000 and 2004 to 2006. His recent books include *Crossing the Rubicon: The Shaping of India’s New Foreign Policy* (2004) and *Impossible Allies: Nuclear India, United States and the Global Order* (2006). E-mail: crmohan53@gmail.com.

Dr Harald Müller is Executive Director of the Peace Research Institute Frankfurt in Germany, and Professor of International Relations at Frankfurt University. Trained as a political scientist, Dr Müller received his PhD from Goethe University in 1981. He has written or edited twelve books on nuclear non-proliferation and has published numerous articles on non-proliferation, arms control, security, and international relations theory. Dr Müller was a member of the German delegation to the NPT Review Conferences in 1995, 2000 and 2005. He served as member of the UN Secretary General’s
Advisory Board on Disarmament Matters from 1999 to 2005, and as its chairman in 2004. In 2004/05 Dr Müller participated in the IAEA Expert Group on Multilateral Nuclear Arrangements. E-mail: mueller@hsfk.de.

**Dr William C. Potter** is Institute Professor and Director of the Center for Non-proliferation Studies at the Monterey Institute of International Studies (MIIS), California. His current research focuses on nuclear terrorism and on proliferation issues involving the post-Soviet states. He has written extensively on various issues related to nuclear non-proliferation and disarmament, his most recent book being *The Four Faces of Nuclear Terrorism* (2005). He served for five years on the UN Secretary General’s Advisory Board on Disarmament Matters and on the Board of Trustees of the UN Institute for Disarmament Research. Dr Potter has been a member of numerous committees of the National Academy of Sciences. He was an adviser to the delegation of Kyrgyzstan to the 1995 NPT Review and Extension Conference and to many sessions of the NPT Preparatory Committee, as well as to the 2000 and 2005 NPT Review Conferences. E-mail: wpotter@miis.edu.

**Dr Tariq Rauf** is Head of Verification and Security Policy in the Office of External Relations and Policy Coordination, IAEA. He has served as scientific secretary for both the IAEA Special Event ‘New framework for the utilization of nuclear energy in the twenty-first century: assurances of supply and non-proliferation’ (2006) and the IAEA Director General’s Expert Group on multilateral approaches to the nuclear fuel cycle (2004–05). Prior to this he directed the International Organizations and Non-proliferation Programme at the Monterey Institute of International Studies. From 1990 to 2002 he was adviser and non-proliferation expert with the Canadian Minister of Foreign Affairs and the Department of Foreign Affairs and International Trade, and to the House of Commons Standing Committee on Foreign Affairs and International Trade. Dr Rauf has also been attached to the Canadian Centre for Global Security and the Canberra Commission on the Elimination of Weapons of Mass Destruction. E-mail: T.Rauf@iaea.org.

**Dr Annette Schaper** has been a senior research associate in the non-proliferation programme at the Peace Research Institute Frankfurt (PRIF) since 1992. Her research covers nuclear arms control and its technical aspects, including the test ban, a fissile material cut-off, verification of nuclear disarmament, fissile materials disposition, and non-proliferation problems arising from civilian–military ambivalence in science and technology. She was a member of the German delegation in Geneva in the CTBT negotiations and a member of the German delegation at the NPT Review and Extension Conference, and has also worked at the Institute of Nuclear Physics of the Technical University Darmstadt. Dr Schaper holds a PhD in experimental physics from Düsseldorf University. Her publications include *A Nuclear Weapon Free World: Can It Be Verified?* and *Implementing Safeguards in Countries of Concern*. E-mail: schaper@hsfk.de.
Dr Lawrence Scheinman is Distinguished Professor of International Policy with the Monterey Institute of International Studies Center for Nonproliferation Studies. Dr Scheinman has been involved in nuclear-related matters as an academic and as a government and international organization official for thirty-five years. Most recently, he served at the US Arms Control and Disarmament Agency as Assistant Director for Nonproliferation and Regional Arms Control and has also been Special Assistant to the Director General of the IAEA, Hans Blix. He is retired from Cornell University, where he was Professor of International Law and Relations. Dr Scheinman earned his PhD at the University of Michigan, and is also a graduate of New York University School of Law. He has published widely in the fields of arms control, international regimes (nuclear in particular) and non-proliferation. E-mail: lscheinman@stimson.org.

Lars van Dassen joined the Swedish Nuclear Power Inspectorate in 2001, where he is Director of the International Cooperation Programme with special responsibility for Sweden’s bilateral non-proliferation assistance to Russia, Ukraine and other states of the FSU. Prior to this he served as programme director at the Department of Peace and Conflict Research, Uppsala University. A political scientist from Århus University in Denmark, van Dassen has published numerous articles on proliferation and non-proliferation issues. His PhD dissertation is entitled Stepping-Stones and Stumbling-Blocks: A Theory-Based Comparison of the Evolution of the Nuclear Non-Proliferation Policies of the Nordic Countries, 1945–2001. E-mail: lars.van.dassen@ski.se.
The chapters of this book deal with red-hot subjects, and are written with tremendous knowledge and good judgement by experts in the fields of International Relations and nuclear proliferation.

Most parts of the book grapple with the problems of how to prevent the *spread* – the proliferation – of nuclear weapons. The concept of ‘spread’ is from the agenda of the states that possess nuclear weapons. They tend to see their own nuclear weapons as indispensable to their own security and any aspirant’s weapon as a grave danger to themselves or the world or both. The genie that came out of the bottle in Hiroshima and Nagasaki now has eight siblings. Some of them may be more imprudent than the others, but each of the nine carries a danger. The conclusion that none should be out is gathering renewed support in the face of current US and UK plans to develop a further generation of nuclear weapons. This book conveys the message – which I endorse – that to prevent undesirable offshoots from a dangerous plant, you cannot leave the plant itself untouched.

Early US efforts sought to preclude individual states from producing highly enriched uranium and plutonium and tried to place the nuclear genie in a jointly controlled bottle. These efforts were rejected by the Soviet Union under Stalin. President Eisenhower’s Atom for Peace Program, which abandoned the ambition of joint control, was more successful. It started from the premise that many states would exploit the atom and that the United States could achieve some control of the development by offering technology, equipment and material and obtain, in return, commitments to exclusively peaceful use and verification of what was transferred. It did not, however, attempt to debar states from developing nuclear programmes on their own – whether peaceful or military.

The Non-proliferation Treaty (NPT) of 1968 was the next step. By this time five states had tested nuclear weapons. The concern was great that the number of nuclear-weapon states could increase and a regulation was desired that would embrace all states. There is, however, no international legislature that can adopt laws binding for all. Rules binding states arise not through majority votes in a world assembly, but through conventions which are negotiated between the states and to which they are invited individually to ratify. To make universal adherence a possibility requires incentives to join and disincentives to stay
outside. In the case of the NPT, incentives for non-nuclear states to join and commit themselves to remain without nuclear weapons and to accept verification were provided in the expectation – but certainly not guarantee – that universal adherence would be achieved, creating a rule-based order that would benefit each and everyone. The NPT provided the opportunity for states to demonstrate to neighbours and the world their commitment to remain without nuclear weapons, and the promise that transfer of nuclear technology to nuclear weapon-free states would be facilitated (without, however, any prohibition of such transfers to non-parties).

These incentives would not have been enough to secure broad adherence. The NPT would not have had sufficient attraction, if its only aim had been to secure a world where the number of nuclear-weapon states was limited to five. It had to be an instrument in which the aim of all parties was a nuclear weapon-free world. This required the commitment of the five existing nuclear-weapon states to negotiate ‘effective measures relating to the cessation of the nuclear arms race at an early date and to nuclear disarmament’.

Through the ‘double bargain’ – of the non-nuclear and the then existing nuclear-weapon states – common ground was created and broad adherence secured. Nevertheless, the treaty was criticized from the outset for being ‘unequal’ – placing clear-cut and important obligations on the non-nuclear-weapon states while letting the nuclear-weapon states off only to negotiate. During the life of the treaty some steps taken have reduced the criticisms, while other steps have led to increased criticism.

All nuclear-weapon states parties have come to accept safeguards control on some or all of their peaceful nuclear facilities. Guarantees have been given – with various conditions attached – that non-nuclear-weapon states will not be subjected to attacks with nuclear weapons. The decision of the states belonging to the Nuclear Suppliers Group to require full-scope safeguards for the transfer of important nuclear technology was also creating a privilege for the non-nuclear-weapon states parties to the treaty. The practice of the same group to apply non-transparent limitations on nuclear exports, on the other hand, caused some resentment.

Despite the ever growing adherence to the NPT, which over time brought Byelorussia, Kazakhstan, Ukraine and South Africa into the treaty, the failure to make the treaty universal has caused strain. There was, of course, never a guarantee that the ambition of universality would be fulfilled. Individually, states considered adherence to NPT in the light of the various incentives and perceived national security interests. To many developing countries, renouncing nuclear weapons did not appear to be much of a cost as the weapons were not within their reach anyway. To other countries the cost may also have appeared small as they were located in areas without serious conflicts or protected by nuclear umbrellas under treaties or alliances.

However, perceived national security interests led India, Israel and Pakistan to stay outside and to develop nuclear weapons, and for the states in the Middle East Israeli’s non-adherence to the treaty and nuclear arsenal have caused a
severe strain in their attitude to the treaty. Many states parties to the treaty also see the recent US–Indian nuclear agreement as being in doubtful consistency with the treaty. Whether or not one agrees with that view, the conclusion can hardly be avoided that with this agreement the joint ambition, which had inspired the parties since 1968 to achieve a rule-based universal regime, was abandoned.

A persistent and increasing strain on the treaty is, in the view of many non-nuclear-weapon states parties, the inadequate implementation by the nuclear-weapon states parties of their duty under Article VI to negotiate towards nuclear disarmament. Naturally this criticism has been strengthened by the advice of the International Court of Justice in 1996 that the obligation under Article VI was not simply an obligation to negotiate but implied a duty to achieve results.

Critics of the nuclear-weapon states welcome the reductions which have been made in the number of nuclear arms, but see them mainly as an elimination of redundancies. They also see value in various other initiatives but they are critical of nuclear-weapon states parties for not considering how they can manage their defence needs without nuclear weapons – as they ask all other states to do. There is widespread frustration that progress is blocked on major instruments like the Comprehensive Test Ban Treaty and the Convention Prohibiting the Production of Nuclear Material for Weapons. There is also resentment that the opposite of disarmament is taking place: new generations of nuclear weapons are being projected; first use is not excluded; a race regarding the control and use of space seems imminent.

Many non-nuclear-weapon states feel the NPT is becoming an ever more unequal treaty. In addition to the obligations they have accepted to be without nuclear weapons and to accept safeguards, new requirements are now directed to them: they should accept additional, more intrusive safeguards verification and participate in a more effective export control system. As if this were not enough, non-nuclear-weapon states possessing nuclear-power installations have been termed ‘virtual nuclear weapon states’ and new arrangements are discussed under which they – but not nuclear-weapon states – should renounce their right to enrich uranium.

Disenchantment with the NPT has arisen also from its lack of reliability. Iraq, the DPRK and Libya breached their commitments and Iran is suspected by many of intending to do so. The inability of the international community to ensure compliance has led the United States to rely less on the treaty and to develop a policy of counter-proliferation, under which it is ready to use military (as well as diplomatic) means – regardless of UN Charter restrictions – to prevent, eliminate or destroy specific nuclear-weapon programmes, if it is doable and if they are deemed to constitute threats to the United States or its allies.

Diplomatic–political means in combination with economic sanctions proved successful in bringing about compliance in the case of Libya and are being tried in the cases of the DPRK and Iran. Military means authorized by the Security Council led in 1991 to the enforcement of NPT obligations in Iraq, while the military intervention – without Security Council authorization – in 2003 failed
to achieve such an aim, as it was based on erroneous national intelligence and directed against weapons which did not exist.

Where does all this leave us? Would a failure of the diplomatic–political–economic means to prevent proliferation in the cases of DPRK and Iran lead to military interventions? Or would the consequences of – possibly unauthorized – military action be deemed too risky and such failure be met only with continued economic and military measures and risk domino effects and new breaches of or desertions from the NPT? Either result would be so grave that extraordinary efforts must be made to succeed through means not involving the use of armed force.

We know that the interest of states in acquiring – as well as in retaining, modernizing and developing – nuclear weapons is mostly dependent upon perceived security interests and recognition of status. Could it be that a return to the common aim of a nuclear weapon-free world once laid down in the NPT and confirmed at the review conferences in 1995 and 2000 would help us out of the present impasse and prevent further erosion or an abandonment of the treaty? The conclusion of this book and of many politicians, writers and experts around the world give an affirmative answer to this acute question – and so do I.

Early and significant steps toward the ‘cessation of the nuclear arms race’ would send as important a signal as the cessation of the Cold War that there would be fewer armed threats to the security of all states, including the DPRK and Iran. Such steps would not eliminate the possibility of economic pressures or even the actual ability of individual states to threaten the use of armed force, but they would gradually reduce incentives to acquire nuclear weapons in order to deter nuclear threats.

Examples of such steps are easy to find: taking nuclear weapons off hair-trigger alert; withdrawing US and Russian nuclear weapons in Europe to rear positions in the United States and Russia; negotiation of a verified cut-off treaty and opening discussions to avoid a weaponization of space; delaying the development of new nuclear weapons; ratification of the Comprehensive Test Ban Treaty, etc.

Are such ideas just utopian? It does not seem so judging by the current international debate, which has prompted even scarred Cold War statesmen to urge a revival of nuclear disarmament. One might also ask if the current course is ‘realistic’, leading us to ever more nuclear-weapon states (or counter-proliferation wars), space weapons that could destroy billions of civilian assets, one or more missile shields that might reduce the restraint to use the ‘swords’, etc.

One might also ask for what conflicts all the nuclear weaponry is meant to be useful. In the past, conflicts between great powers (and others, too) usually regarded the possession of territory, the drawing of borders, or the spread of religion or ideology. Such conflicts continue to exist and to give rise to tragic armed actions in particular regions in the world, notably the Middle East and Africa, but they are no longer found between great powers. Is it seriously argued that these states might need nuclear arms to back up their demands for supplies of oil and gas from the Middle East and Central Asia? Or to reinforce their positions
on permissible emissions of carbon dioxide into the atmosphere or their views as to what the exchange rates of their currencies should be? Or, is it seriously argued that nuclear arms are to be dropped on ‘rogue’ states or terrorist camps in some failed state?

It is easy to see that some weapons industries and constructors may be in need of continued development and production of nuclear arms, but the military professionals seem less than enthusiastic about weapons that take a big chunk out of their budgets and are of only theoretical use, and governments seem to provide no better justifications than that the future is uncertain.

There are good reasons for governments to find their way back to the common ground which they established through the double bargain in the NPT and which aimed at a nuclear weapon-free world. If, as has been suggested by many, the United States and the other four nuclear-weapon parties to the NPT were to take the lead in such a movement, the other states possessing nuclear weapons could hardly resist joining and there would be an enthusiastic response around the whole world and a reduction in tensions. Vast resources of engineering and construction talent and money would become available for joint action against the accelerating threats to our climate and environment.

Hans Blix
Stockholm
Preface

For two years, the Norwegian Institute of International Affairs (NUPI) has been the host institution of an international book project on contemporary nuclear proliferation challenges. In search of an overarching strategy that recognizes both the flaws of the existing non-proliferation regime and the value of some of the correctives proposed by regime critics, a range of cases and policy options have been examined. The goal has been to identify better non-proliferation tools and strategies. The project has been funded in full by the Norwegian Research Council.

The members of the project group were Astrid Forland, Jozef Goldblat, Peter Hayes, Sverre Lodgaard, Talat Masood, Marvin Miller, Steven Miller, Raja Mohan, Harald Müller, Morten Bremer Mæli, William Potter, Tariq Rauf, Annette Schaper, Lawrence Scheinman and Lars van Dassen. All have written chapters of this book. Each chapter has been reviewed by independent experts in the field. All authors are individually responsible for their contributions.

The first project meeting was convened in Oslo in September 2004 to determine project plans and division of labour. At another meeting in Oslo in October 2005, both authors and reviewers took part in a discussion of draft chapters. Prior to the 2005 Review Conference of Non-proliferation Treaty (NPT), the project issued a set of ‘Policy Briefs on the Implementation of the Treaty on the Non-proliferation of Nuclear Weapons’ (available at www.nupi.no). Throughout the project period, members of the group also played active roles in other related projects. NUPI would like to retain this uniquely qualified network of scholars for future disarmament and non-proliferation studies.

The book has benefited greatly from the insights and expertise of the following reviewers: Joseph Cirincione, Ola Dahlman, Rose Goettemoeller, Brynjar Lia, Alexander Nikitin, George Perkovich, Andreas Persbo, Paolo Cotta Ramusino, Henrik Salander, Mohamed Shaker, Nikolai Sokov, Geir Ulfstein and William Walker. We are indebted to them for their valuable comments, and for the interest they have shown in the project and its objectives.

Anja Kristin Bakken, Berit Ingjerd Grønnestad, Liv Høivik, Susan Høivik, Helene Revhaug, and Jan Risvik of the NUPI-staff have offered swift and precious assistance in all phases of the book project.

We hope the book will expand knowledge and stimulate debate on
non-proliferation and disarmament problems, and inspire students of all ages – of natural as well as political sciences – to explore sustainable approaches to diminish the political and military roles of nuclear weapons.

Sverre Lodgaard
Morten Bremer Mærli
Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABACC</td>
<td>Argentine–Brazil Agency for Accounting and Control of Nuclear Materials</td>
</tr>
<tr>
<td>ABM</td>
<td>anti-ballistic missile</td>
</tr>
<tr>
<td>ACRS</td>
<td>Arms Control and Regional Security</td>
</tr>
<tr>
<td>AEOI</td>
<td>Atomic Energy Organization of Iran</td>
</tr>
<tr>
<td>AP</td>
<td>Additional Protocol</td>
</tr>
<tr>
<td>ASU</td>
<td>Arab Socialist Union</td>
</tr>
<tr>
<td>BWC</td>
<td>Biological Weapons Convention</td>
</tr>
<tr>
<td>CAS</td>
<td>Committee on Assurances of Supply</td>
</tr>
<tr>
<td>CBM</td>
<td>confidence-building measures</td>
</tr>
<tr>
<td>CBSM</td>
<td>confidence-building and security measures</td>
</tr>
<tr>
<td>CCD</td>
<td>Conference of the Committee on Disarmament</td>
</tr>
<tr>
<td>CD</td>
<td>Conference on Disarmament</td>
</tr>
<tr>
<td>CIA</td>
<td>Central Intelligence Agency</td>
</tr>
<tr>
<td>CPI</td>
<td>Counter-proliferation Initiative</td>
</tr>
<tr>
<td>CTBT</td>
<td>Comprehensive Nuclear Test Ban Treaty</td>
</tr>
<tr>
<td>CTBTO</td>
<td>Comprehensive Test Ban Treaty Organization</td>
</tr>
<tr>
<td>CTR</td>
<td>Cooperative Threat Reduction</td>
</tr>
<tr>
<td>CWC</td>
<td>Chemical Weapons Convention</td>
</tr>
<tr>
<td>DMZ</td>
<td>Demilitarized Zone</td>
</tr>
<tr>
<td>DPRK</td>
<td>Democratic People’s Republic of [North] Korea</td>
</tr>
<tr>
<td>EBRD</td>
<td>European Bank for Reconstruction and Development</td>
</tr>
<tr>
<td>EEZ</td>
<td>exclusive economic zone</td>
</tr>
<tr>
<td>EIF</td>
<td>entry into force</td>
</tr>
<tr>
<td>ENDC</td>
<td>Eighteen Nation Disarmament Committee</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>E-3</td>
<td>Britain, France and Germany</td>
</tr>
<tr>
<td>Euratom</td>
<td>European Atomic Energy Community</td>
</tr>
<tr>
<td>FCO</td>
<td>Foreign and Colonial Office</td>
</tr>
<tr>
<td>FMCT</td>
<td>Fissile Material Cut-off Treaty</td>
</tr>
<tr>
<td>FR</td>
<td>Federal Republic</td>
</tr>
<tr>
<td>GNEP</td>
<td>Global Nuclear Energy Partnership</td>
</tr>
<tr>
<td>GTRI</td>
<td>Global Threat Reduction Initiative</td>
</tr>
</tbody>
</table>
Abbreviations

HEU highly enriched uranium
IADA International Atomic Development Authority
IAEA International Atomic Energy Agency
ICBM intercontinental ballistic missile
ICF inertial confinement fusion
ICJ International Court of Justice
IDC International Data Centre
IMS International Monitoring System
IND improvised nuclear device
INF intermediate-range nuclear forces
INFCE International Nuclear Fuel Cycle Evaluation
IPS international plutonium storage
IRA Irish Republican Army
ISTC International Science and Technology Centre
ITDB Illicit Trafficking Database
KEDO Korean Peninsula Energy Development Organization
LEU low enriched uranium
LNG liquefied natural gas
LWR light-water reactor
MEWMDFZ Middle Eastern Weapons of Mass Destruction Free Zone
MoU memorandum of understanding
MPCA Material Protection, Control and Accounting
MTCR Missile Technology Control Regime
NAC New Agenda Coalition
NAM Non-aligned Movement
NATO North Atlantic Treaty Organization
NBC nuclear, biological and chemical
NCA National Command Authority
NCRI National Council of Resistance in Iran
NFU no first use
NGO non-governmental organization
NNWS non-nuclear-weapon state
NPT Treaty on the Non-proliferation of Nuclear Weapons
NSG Nuclear Suppliers Group
NSS National Security Strategy
NSSP Next Steps in Strategic Partnership
NTM national technical means
NWFZ Nuclear Weapon-Free Zone
NWS nuclear-weapon state(s)
OPANAL Organization for the Prohibition of Nuclear Weapons in Latin America
OPCW Organization for the Prohibition of Chemical Weapons
P-5 five permanent members of the UN Security Council
PAL Permissive Action Link
PAROS Prevention of an Arms Race in Outer Space
PLO  Palestine Liberation Organization
PSI  Proliferation Security Initiative
PTS  Provisional Technical Secretariat
RERTR  Reduced Enrichment for Research and Test Reactors
RFCC  Regional Nuclear Fuel Cycle Centre
ROK  Republic of [South] Korea
SAARC  South Asian Association for Regional Cooperation
SAFF  safing, arming, fusing and firing
SALT  Strategic Arms Limitation Talks
SLBM  submarine-launched ballistic missile
SORT  Strategic Offensive Reduction Treaty
SSBS  Science-based Stockpile Stewardship
START  Strategic Arms Reduction Talks
TACIS  Technical Assistance to the Commonwealth of Independent States
TDM  theatre missile defence
TNRC  Teheran Nuclear Research Centre
TNW  tactical nuclear weapons
TTBT  Threshold Test Ban Treaty
UNCLOS  UN Convention on the Law of the Sea
UNCTAD  United Nations Conference on Trade, Aid and Development
UNGA  United Nations General Assembly
UNIDIR  United Nations Institute for Disarmament Research
UNSC  UN Security Council
WANO  World Association of Nuclear Operators
WMD  weapons of mass destruction
WMDC  Weapons of Mass Destruction Commission
WMDFZ  Weapons of Mass Destruction Free Zone
WTO  World Trade Organization
1 Introduction

Morten Bremer Mærli and Sverre Lodgaard

On the night of 27 February 1943, in a valley some 170 km west of Oslo, nine Norwegian commandos climbed down a steep gorge and across an ice-choked river. On the top of the other side, a railway track led straight to the Vemork hydrogen-electrolysis plant at Rjukan – then the world’s only producer of heavy water. The plant, controlled by Germans in Nazi-occupied Norway, had become an essential element of Hitler’s nuclear programme. The saboteurs cut open the railway gate, entered the plant and mounted two explosive charges. Vital parts of the plant were destroyed, together with weeks of heavy water production.

The Vemork raid was one of the most heroic sabotage acts of the Second World War, daring and spectacular in every way. It was, moreover, the first act of counter-proliferation, albeit a defensive act in a war of aggression launched by Germany. After a follow-up bombing raid by the Allies in November 1943, the Germans abandoned the heavy water production altogether. A second attack by Norwegian commandos, sinking a local ferry, ensured that not even semi-finished products from the plant would arrive at Nazi research facilities. Then, like now, the exceptional power of nuclear weapons called for exceptional actions.

Nuclear weapons were soon to transform international affairs in the most fundamental of ways. As the Cold War unfolded, they spread through their own chain reaction. In 1945, only the United States possessed the ability to rein and release the destructive inner forces of the atom. The two Japanese cities of Hiroshima and Nagasaki were obliterated, demonstrating the unparalleled destructivity of such weapons.

By 1964, four other states had tested and hence crossed the nuclear threshold: the former Soviet Union in 1949, the United Kingdom in 1952, France in 1960 and China in 1964. In 1968, the P-5 – the five permanent members of the UN Security Council – became the five nuclear-weapon states recognized by the Non-proliferation Treaty (NPT). The treaty invited all other states to forgo such weapons.

That call was not heeded by everybody. India performed a ‘peaceful nuclear explosion’ in 1974 – but did not confirm its membership in the nuclear club until 1998, when, in the course of a few hectic days in May that year, it performed a series of weapon tests. Pakistan followed suit a couple of weeks later. Israel has never admitted to having nuclear weapons, yet its policy of opacity is not quite
opaque: the first couple of bombs were assembled already in 1967, in a crash effort immediately before the Six Day War (Cohen 1998).

In 1981, Israeli fighter planes attacked Osirak, an Iraqi nuclear reactor complex under development. The mission was supposed to prevent Saddam Hussein from developing a nuclear-weapon capability. The strike was hailed as a counter-proliferation success, the second of its kind after the Vemork action in wartime Norway.

However, when the full story of Iraq’s nuclear programme got known after the Gulf war of 1991, this turned out to be a myth: it was only after the bombing that Saddam was able to muster human and material resources in pursuit of nuclear arms. Still, the use of force to destroy the programmes of states of particular proliferation concern – North Korea and Iran in particular – remains an option in US foreign policy.

Four states have willingly renounced their nuclear weapons. When the Soviet Union fell apart in 1991, Ukraine became the world’s third-largest nuclear power, but chose to accede to the NPT as a non-nuclear-weapon state (NNWS) together with Belarus and Kazakhstan.

In March 1993, two years after it had signed the NPT as a NNWS, President de Klerk declared that South Africa had produced, and then dismantled, six gun-type nuclear explosives. An international verification mission, who got full access to all relevant information, confirmed it. The turnaround was the fruit of regime change, as majority rule was about to replace the apartheid system.

Many other states have discontinued their attempts to acquire nuclear capabilities. One of them, Libya, abandoned its nuclear programme in 2003, due to a unique combination of international pressure and domestic developments.

Whereas the first half of the 1990s saw substantial nuclear arms reductions, a boost in the number of NPT members, and a gradual strengthening of the non-proliferation regime, trends have turned since then. In many ways, the prominence of nuclear weapons is on the rise in military planning and world politics. Some forty nations have the technical infrastructure to pursue nuclear-weapon programmes; the political incentives to acquire them have grown stronger in some of the most conflict-ridden regions of the world; and the integrity of the international non-proliferation regime – the main barrier against proliferation – can no longer be taken for granted.

Non-proliferation dilemmas

The end of the Cold War and the break-up of the Soviet Union created new and immediate proliferation challenges. Gone was the bipolar stability, and gone was the totalitarian control of the world’s largest nuclear complex, housing weapons in the tens of thousands and hundreds of tons of fissile material. The vast potential accessibility of nuclear material and technology might ease the acquisition efforts of any nuclear aspirant. At the same time, a new breed of non-state actors operating outside the sphere of traditional deterrence, and escaping international export controls, had entered the scene.
A.Q. Kahn, the father of Pakistan’s nuclear bomb, was the spider in an extensive illicit network in nuclear technologies, with states operating on the fringes of the non-proliferation regime on the customer list. Highly profiled terrorist networks like al-Qaeda and the Japanese doomsday cult Aum Shinrikyo were developing their own nuclear agendas.

Today, what is left of the nuclear arms control architecture to meet such challenges is basically the NPT and associated non-proliferation instruments – an accord geared at controlling the nuclear activities of states and preventing interstate proliferation. Disarmament structures have crumbled and verified nuclear disarmament has come to a standstill. For the NPT this is untenable, for non-proliferation and disarmament are inextricably linked: without progress on nuclear disarmament there cannot be much progress on non-proliferation, and in the absence of an efficient regime to curb the spread of nuclear arms it may be impossible to revive nuclear disarmament. Predicated on this relationship, the treaty is under serious strain. Also, in the face of recent cases of non-compliance, its enforcement mechanisms are obviously too weak. The total failure of the 2005 NPT Review Conference as well as the 2005 UN Millennium Summit to substantially address contemporary nuclear threats testify to the crisis in nuclear disarmament and non-proliferation.

Current US policies against proliferation may be seen as a much-needed response to these new challenges and treaty deficiencies (Ellis 2003: 116). The Bush administration has engaged actively in improving nuclear export controls and in strengthening the firewall between civilian and military nuclear activities. It has proposed mechanisms for reliable fuel supplies, worked to repatriate and secure proliferation-attractive and vulnerable nuclear fuel, and enhanced international capabilities to interdict illicit shipments of nuclear material, equipment and technology through the Proliferation Security Initiative.

In April 2004, the UN Security Council unanimously adopted Resolution 1540 from a draft text submitted by the US delegation. The resolution identifies important measures to strengthen international non-proliferation through strengthened regulatory order. UNSC Resolution 1540 reverts to the common diplomatic language of non-proliferation, multilateralism and cooperation (Walker 2004: 75). It aims at filling a gap in the international non-proliferation regime – proper responses against non-state entities.

These initiatives may be obscured, however, by Washington’s own policies of nuclear exceptionalism. In an à la carte approach to nuclear arms control, the US openly dismisses some treaties as irrelevant, anachronistic or dangerously unreliable while taking a selective view of the NPT, and stresses the obligations of NNWSs while belittling its own commitment to disarm under Article VI of the treaty.

Furthermore, the jury is still out when it comes to the merits of US and NATO plans for deploying defensive systems to counter emerging ballistic missile capabilities. The systems proposed, planned and put in place may upset strategic stability and spur renewed arms build-up. The new Topol M generation of Russian nuclear missiles is the first such step since the collapse of the Soviet
Union. Russia seems determined not to be intimidated by the new missile
defence systems.¹

China, which has only a few tens of intercontinental strategic missiles,
appears bent on expanding its force to maintain a deterrence capability vis-à-vis
the United States. The United States, on its part, never resolved to base this rela-
tionship on mutual deterrence. It deems a combination of offensive and defen-
sive capabilities to be essential in meeting the security requirements of the
twenty-first century. Counter-proliferation may be understood as the ‘full range
of military preparations and activities to reduce, and protect against, the threat
posed by nuclear, biological, and chemical weapons and their associated deliv-
ery means’ (US Department of Defense 2001: 78). It may operate as a stand-
alone policy. However, it may also be used as a means of regime change – an
externally initiated overthrow of a government considered illegitimate or
threatening.

The currency of arms control and disarmament has been capabilities – a
question of limiting the number of nuclear bombs, warheads and delivery
systems along with changes in the doctrines guiding their use. The Bush admin-
istration turned its attention to the owners – making regime change a central
tenet in US foreign and security policy – and trying to control nuclear intentions
by carrots and sticks.² In rudimentary terms, nuclear weapons come in two cat-
egories: the stabilizing and ‘good nukes’ of the United States and its allies and
the ‘bad nukes’ of rogue, proliferating states. A logical concomitant of this shift
is diminished interest in nuclear verification. Intentions cannot be verified, only
confirmed or disproved through deeds.

About the book

According to the NPT, nuclear weapons are temporarily legal in five countries
(the five that had tested prior to 1 January 1967), not illegal in three others
(Israel, India and Pakistan, which never joined the NPT)³ and forbidden every-
where else (Perkovich 2003). Due to the non-proliferation norm established by
the NPT, the long-term efforts of the United States and others to gain acceptance
for it, and the international inspection regime developed under the NPT, the
world now has nine nuclear-weapon states. Without the treaty, this figure could
have been much higher (Bunn 2003).

The vast majority of states share the overarching goal of nuclear non-
proliferation. Further spread of nuclear explosives is simply not deemed accept-
able. However, while the norm of nuclear non-proliferation has been widely
recognized, the preferred means to uphold it differ strongly. US policies not only
go beyond the confines of the international non-proliferation regime: in import-
ant respects, they run counter to basic regime characteristics.

This volume discusses the strengths and weaknesses of the nuclear non-
proliferation regime as well as the functional and dysfunctional aspects of US
and other major power policies. It examines proliferation pressures from above
(the failure to disarm), from within (Iran, North Korea), from outside (India,
Israel, Pakistan), as well as pressures from below the regime (in the non-state paradigm). Cognizant of the loss of common ground, and of the limits on common policies imposed by divergent threat perceptions and current nuclear mindsets, it discusses a range of policies that may help save the regime and stem proliferation. The cause of non-proliferation can benefit from a search for common positions.

Special attention is paid to the compatibilities and incompatibilities of US policies and policies cast in the framework of the non-proliferation regime, and ways in which they can adjust and coexist: re-creating common ground is a must for non-proliferation and disarmament to succeed. To the extent that differences cannot be reconciled, ways of possible coexistence between the various policies and instruments are investigated. The analysis is undertaken in the context of systemic changes in international affairs, as diverging approaches to non-proliferation reflect differing national preferences on world order issues.

The book revives a non-proliferation debate that used to be central to international security considerations, and that is now regaining momentum in an international political context much different from that of the Cold War and of the 1990s. Traditionally, much non-proliferation thinking has been based on political realism, asserting that, in an anarchic and unfriendly international environment, states will seek nuclear capabilities to enhance their security. On the assumption that nuclear-weapon states (NWS) will act more responsibly, it has been argued that more is better. However, this presupposes that all actors involved are rational, and that deterrence works. The exceptional political power of nuclear weapons, moreover, rests upon their uniqueness – and hence its scarcity.

Others hold that more NWS would be destabilizing, and that the risk of deterrence failures and deliberate or accidental launches is likely to increase with rising numbers of nuclear weapon possessors. They argue that the number of NWS should be limited and reduced as much as possible, along with limitations and reductions of their arsenals. The authors of this volume subscribe to that view.

Notes

Lars van Dassen provided useful inputs on an earlier draft of the text, as did colleagues at NUPI during a working-seminar.

1 In November 2004, Russian President Putin stated that the Russian Federation intends to develop the world’s most sophisticated nuclear missile (Saradzhyyan 2004).

2 The Iraq Liberation Act of 1998 (Public Law 105-338) codifies the policy calling for US promotion of regime change in Iraq, and was used to authorize the use of military force in 2003.

3 North Korea’s formal nuclear status remains undefined and unclear.
Part I

Growing pressures, fragile policies
2 Ban on nuclear-weapon proliferation in light of international law

Jozef Goldblat

The 1968 Treaty on the Non-proliferation of Nuclear Weapons (NPT) – in force since 1970 – is unique among arms control agreements. It prohibits the possession of the most destructive weapons by an overwhelming majority of states, but tolerates the possession of these weapons by a handful of states. The main burden of non-proliferation undertakings is thus carried by the non-nuclear-weapon states (NNWS).

The nuclear-weapon states (NWS) are not only allowed to retain and expand their nuclear arsenals during an undefined period of time, but are also free to assist each other in developing nuclear warheads and in testing them, as well as to receive from any state the materials necessary to pursue their nuclear-weapon programmes, to deploy nuclear weapons on the territories of other states and to decide by themselves whether, and to what extent, to accept international controls over their nuclear activities. To make the asymmetry of rights and obligations under the NPT acceptable to as many countries as possible, the NWS have committed themselves to negotiating nuclear disarmament and to contributing to the development and use of nuclear energy for civilian ends in NNWS.

At the time the NPT was negotiated, very few countries had the technological know-how and equipment, or the material means, needed to manufacture a nuclear bomb. Today, nearly four decades after the conclusion of the treaty, several states – thirty to forty, according to some estimates – possess a modern technological base and sufficient financial resources to ‘go nuclear’. Negotiations for nuclear disarmament are not being held, and the goal of reaching a nuclear weapon-free world appears more distant than ever. The NNWS receive scant assistance in the development of nuclear energy for peaceful purposes. Moreover, for the first time, a party to the NPT has unilaterally withdrawn from the treaty, while another party has threatened to do the same. The degradation of the NPT may give rise to a new nuclear arms race involving more actors than during the Cold War.

In light of international law, this chapter discusses the shortcomings and weaknesses of the NPT with a view to remedying them, and seeks to identify the gaps in the treaty with a view to closing them. Interpretations of a few controversial provisions of the NPT were agreed upon before the conclusion of the negotiations, but they have not been recorded in an official document. It should,
moreover, be noted that the NPT was drafted in the Eighteen Nation Committee on Disarmament, and that the understandings reached by the members of the Committee could not be binding on all the current 189 parties.

Definitions

*Nuclear weapons*

‘Nuclear weapons or other nuclear explosive devices’, the proliferation of which the NPT is to halt, are not defined in the treaty, although an authoritative definition already existed at the time the NPT was under negotiation. In the 1967 Treaty of Tlatelolco, prohibiting nuclear weapons in Latin America and the Caribbean, the definition reads as follows: ‘A nuclear weapon is any device which is capable of releasing nuclear energy in an uncontrolled manner and which has a group of characteristics that are appropriate for use for warlike purposes.’ An instrument that may be used for the transport or propulsion of the device is not included in this definition if it is separable from the device and not an indivisible part thereof.

Even much earlier, although in a different context, an ‘atomic weapon’ was defined in the 1954 Protocol No. III to the 1948 Brussels Treaty (Paris Agreements on the Western European Union) as ‘any weapon which contains, or is designed to contain or utilize, nuclear fuel or radioactive isotopes and which, by explosion or other uncontrolled nuclear transformation of the nuclear fuel, or by radioactivity of the nuclear fuel or radioactive isotopes, is capable of mass destruction, mass injury or mass poisoning’. Also, any part, device, assembly or material especially designed for, or primarily useful in, any weapon as set forth above, shall – according to this definition – be deemed to be an atomic weapon. The term ‘other nuclear explosive devices’ is meant to denote those used for peaceful purposes.

*Nuclear-weapon states*

A nuclear-weapon state was defined as one that had exploded a nuclear explosive device prior to 1 January 1967. The choice of this date was intended to limit the number of NWS to five: the United States, the Soviet Union, the United Kingdom, France and China. Later, however, it proved difficult to maintain that a state which exploded such a device after the set time limit should continue to be classified as non-nuclear. This question first arose in 1974, when India conducted a nuclear explosion and thereby crossed the formal threshold separating NWS from NNWS. Reiterated assurances by successive Indian governments that they were pursuing only peaceful ends put India in the intermediate class of nuclear threshold states until 1998, when both India and Pakistan tested nuclear explosive devices. Given the dates of these explosions, these states cannot join the NPT as NWS. Nor can they join the NPT as NNWS, unless they destroy their nuclear weapons and become non-nuclear, which they are unlikely to do.
However, in July 2005, the President of the United States decided – apparently without consulting the US Congress or his NATO allies – that India, as a ‘responsible’ nuclear country, should be granted the benefits it would enjoy if it were an NWS party to the NPT. According to an agreement reached on 2 March 2006, India is to have the right to import nuclear material and equipment for peaceful purposes without submitting itself to the comprehensive IAEA nuclear safeguards applied in NNWS.¹

This decision reverses the policy adopted by the United States many years ago, to prevent supplies of nuclear technology to non-NPT parties. It may seriously weaken the nuclear export controls and harm the entire non-proliferation regime. Some NNWS may even start reconsidering the usefulness of their non-proliferation posture.² The change comes at a time when uranium enrichment technology is being denied to Iran, a party to the NPT, which – unlike India – has not yet demonstrated its nuclear-weapon capability.

As a quid pro quo, India would assume the same non-proliferation responsibilities and practices as countries recognized as NWS by the NPT. It would uphold a moratorium on nuclear test explosions; it would separate the reactors it uses for power production from those it uses for weapon purposes; it would maintain strict export controls; it would refrain from transferring sensitive nuclear technologies; and it would support negotiations for a fissile material cutoff treaty (FMCT). India has also declared its readiness to commence negotiations for a nuclear-weapon convention.

However, India has not promised to sign the Comprehensive Nuclear Test Ban Treaty (CTBT), nor has it committed itself to halting the production of fissile materials for weapon purposes until an FMCT should be concluded. (As of early 2007 it was not even clear whether negotiations for such a treaty would be held.) In other words, India would be free to continue manufacturing nuclear weapons for an indefinite period of time.

The formal non-nuclear-weapon status of North Korea did not change when it claimed to have acquired nuclear weapons. Israel is generally recognized as possessing nuclear weapons, but, according to the criteria set by the NPT, its status remains non-nuclear.

**Non-transfer and non-acquisition of nuclear weapons**

**Ban on manufacture**

The NWS have undertaken not to transfer ‘to any recipient whatsoever’ (including non-state entities or international organizations), ‘directly or indirectly’, nuclear weapons or other nuclear explosive devices or control over them, and not to in any way ‘assist, encourage, or induce’ any NNWS to manufacture or acquire such weapons or devices. The NNWS have pledged themselves not to receive from any transferor, ‘directly or indirectly’, nuclear weapons or other nuclear explosive devices or control over them, as well as not to manufacture them or receive assistance in their manufacture (Articles I and II). The ban
covers the transfer of ownership or control that would give the recipient an independent ability to use nuclear weapons. As explained by the negotiators, the words ‘directly or indirectly’ were used to prevent evasion of the treaty prohibitions by such means as transfer of a nuclear weapon through an intermediary not party to the NPT.

It is not quite clear what the negotiators meant by banning the ‘manufacture’ of nuclear weapons. The US interpretation was that facts indicating that the purpose of a particular activity was to acquire a nuclear explosive device would tend to serve as evidence of non-compliance. Thus, construction of an experimental prototype nuclear explosive device would be covered by the term ‘manufacture’, as would be the production of components relevant only to a nuclear explosive device. It is, however, understood that uranium enrichment (increasing the concentration of uranium-235 in uranium through isotope separation), plutonium reprocessing (separating plutonium from fission products present in spent reactor fuel), as well as stockpiling fissionable material in connection with a peaceful nuclear programme, do not violate the NPT, as long as these activities are safeguarded.

This interpretation has remained unchallenged, but it is not satisfactory from the non-proliferation point of view. Should a state with a fuel-cycle activity decide to break out from the treaty, it could put together a nuclear bomb within just a few months. The danger that this may happen is not negligible. Moreover, highly enriched uranium (HEU) can be found in a number of facilities in NNWS, primarily in research reactors, where it is used for civilian purposes, including medical treatment. Several of these sites have enough fissile material to produce an explosive device. Efforts to replace highly enriched uranium with low enriched uranium (LEU) in all peaceful nuclear applications have so far proven unsuccessful.

To deal with the above-described dilemma, the following proposal has been made by the United States: NNWS that wish to develop nuclear energy for non-military purposes should undertake not to manufacture, store or reprocess nuclear fuel. The supply of fresh fuel to these NNWS, as well as the retrieval of spent fuel, would be guaranteed ‘at reasonable prices’ by the existing fuel producers. Countries possessing the needed technology would undertake not to supply equipment or fuel for nuclear reactors to those NNWS that had not relinquished their right to enrich uranium and/or separate plutonium.

It has been suggested that the IAEA should be the guarantor of fuel supply, but it is doubtful whether the Agency would be in a position to perform such a gargantuan task, and whether states would be sufficiently confident of the impartiality and efficiency of the Agency to abstain from a national fuel cycle. The new approach amounts to creating a new distinction among the parties to the NPT: between the NNWS that are engaged in the enrichment of uranium and the separation of plutonium, and those that are not. The former would continue exercising the right to possess an independent peaceful nuclear industry, while the latter would have to rely, in this vital sector of national economy, on the good will of others.
On the other hand, if each country operating a nuclear reactor had a full fuel cycle, international security would be threatened by the risk of further nuclear-weapons proliferation among states, as well as by easier access to nuclear weapons-grade material for terrorist organizations. Renunciation by individual states of uranium enrichment and of spent fuel reprocessing seems more likely to be accepted within the framework of multinational, especially regional, arrangements based on joint ownership and co-management of relevant facilities, than as a result of pressure exerted by the nuclear ‘have’. The problems are both political and economic. Proposals for setting up an international plutonium storage (IPS) in compliance with the relevant provision of the IAEA Statute have not materialized, mainly because of divergent opinions as to procedures for withdrawing the stored material.

No international norm restricts the production of tritium for military ends. And yet, this radioactive gas, which boosts the yield of explosions, is a component of modern nuclear weapons. It has a half-life of about twelve years and is regularly replaced.

**Ban on assistance to manufacture**

Another deficiency of the NPT is that it does not ban NNWS parties to the NPT from providing assistance in the manufacture of nuclear weapons to NNWS not parties to the NPT. In 1968, before signing the treaty, the Soviet Union and the United States – the powers responsible for the formulation of the relevant clauses of the NPT – stated that such assistance would be considered a violation of the Treaty. However, the loophole exists. Until recently, certain countries conducting clandestine nuclear-weapons programmes could purchase nuclear designs and equipment on the black market operated by a nuclear weapon scientist, a citizen of Pakistan, which is not party to the NPT. Not being obligated to comply with the NPT, Pakistan cannot be accused of having violated it, whereas the non-nuclear-weapon parties to the treaty – those receiving Pakistani assistance to manufacture nuclear weapons – can be. The need to achieve universal adherence to the non-proliferation regime universally would thus appear imperative.

**Nuclear sharing**

In the process of ratification of the NPT by the US Congress, the US government made a declaration of interpretation, according to which the treaty would cease to be valid in time of war. From the start of hostilities, transfer to any recipient of nuclear weapons, which in peacetime remain under the control of US forces, as well as their acquisition by NNWS by other means, would cease to be prohibited. This interpretation, called ‘war reservation’, contradicts the essential provisions of the NPT. Nevertheless, the nuclear sharing arrangements for participation and cooperation by NATO allies in the use of nuclear weapons in case of war, as developed in the late 1960s, have remained in force. Pilots from
several NNWS have been trained to fly nuclear missions, and their aircraft have been equipped accordingly. Many countries were not aware of the US ‘war reservation’ when they signed the NPT. However, war does not put an end to all pre-war treaty obligations in existence between the belligerents. It stands to reason that a treaty that imposes restrictions on the possession of a certain type of weapon with a view to minimizing the risk of its use must remain in force also during armed conflict. There can be no doubt that the NPT belongs to this category of treaties.

In ratifying the NPT, several states placed on record their understanding that the Treaty should not impede unification in Western Europe. They wanted to keep open the possibility of a united Europe sharing the nuclear weapons of France and the United Kingdom. However, since the NPT prohibits the transfer of nuclear weapons to ‘any recipient whatsoever’, sharing the possession of, and control over, such weapons among the sovereign members of the European Union must be ruled out. Only a Europe fully integrated in a federated state could qualify as a successor to the nuclear status of the present European nuclear-weapon powers without causing an increase in the number of nuclear-weapon states. This prospect is remote.

On the other hand, the drafters of the NPT did not foresee the disintegration of a nuclear-weapon power – yet this did occur. The break-up of the Soviet Union gave rise to claims by some of the newly independent states (Ukraine and Kazakhstan) to those portions of the Soviet nuclear arsenal stationed on their territories. These claims were eventually abandoned and the integrity of the NPT was maintained.

**Verification of compliance**

**Safeguards agreements**

Should a non-nuclear-weapon state decide to produce a nuclear weapon, it would need the requisite quantity of weapon-grade fissile material. The availability of this material is of crucial significance; hence the need for international control. Safeguards devised to meet this need must be able to detect in a timely fashion the diversion of ‘significant’ quantities of nuclear material from peaceful nuclear activities to the manufacture of nuclear explosive devices, as well as to deter diversion by creating the risk of early detection. Subject to safeguards are plutonium and uranium, the fissionable materials defined in the IAEA Statute, as well as the equipment for their processing, use or production. Neptunium and americium could also pose a nuclear proliferation risk if available in separated form and in sufficient quantities, but they are not covered.

The verification functions are performed by the IAEA, which is an autonomous intergovernmental organization founded in 1957 to promote peaceful uses of nuclear energy. The IAEA safeguards, adopted before the conclusion of the NPT, were intended to ensure that nuclear items obtained with the help or under the supervision of the IAEA would not be used for any military purpose.
The safeguards adopted for the NPT made allowance for the withdrawal from international control of nuclear material destined for non-explosive military purposes. This allowance could be misused because the enriched uranium used for the propulsion of ships, especially submarines, is often the same as that used in nuclear weapons. To prevent abuses, special arrangements would have to be made between the state withdrawing the nuclear material in question and the IAEA, in order to identify the circumstances under which safeguards would not be applied. The state would have to make it clear that the unsafeguarded material (the quantity and composition of which would have to be made known to the IAEA) would not be used to produce nuclear weapons or other nuclear explosive devices. Safeguards would apply again as soon as the nuclear material was reintroduced into a peaceful nuclear activity. However, such verification could be thwarted by claims of military secrecy.

When in 1987 Canada decided to take advantage of this exemption provision – never applied before – and acquire a fleet of ten to twelve nuclear-powered (but conventionally armed) attack submarines in order to assert its claims to sovereignty in Arctic waters, doubts arose about the compatibility of such an acquisition with Canada’s commitment to the cause of non-proliferation. The plans were subsequently cancelled. The letter of the NPT would not have been affected if Canada had come into possession of nuclear-powered submarines, but a precedent would have been set for non-application of comprehensive safeguards by the NNWS parties to the NPT.

Precise time limits are stipulated in the NPT for the initiation of negotiations for, and the entry into force of, safeguards agreements between the parties and the IAEA. Several dozen states have failed to conclude such agreements in time. In a few cases when the relevant treaty provision had been ignored, suspicions arose that the basic non-proliferation obligations were being ignored as well. Thus, when North Korea, which was engaged in nuclear activities, refused, under varying pretexts, first to negotiate and later to agree to comprehensive controls over these activities, its refusal was interpreted by many as an attempt to conceal a nuclear-weapon development programme. North Korea eventually concluded the required agreement, but doubts persist as to whether and, if so, to what extent, it took advantage of the delay to extract a significant amount of plutonium from the nuclear fuel irradiated in one of its reactors and to hide it away for weapon purposes. There is no specific clause in the NPT for dealing with such a situation.

The NPT requires that safeguards be implemented in such a manner as to avoid hampering the economic or technological development of the parties or international cooperation in the field of peaceful nuclear activities. This requirement seems to have been met, although there have been occasional complaints that controls complicate the production process or are a burden for enterprises because of the cost and the threat to industrial secrets.

Large accumulated quantities of readily accessible weapon-usable nuclear material are difficult to safeguard because of measurement uncertainties: the margin of error is dangerously high. In addition to plutonium separated by
certain states from spent nuclear power reactor fuel, many tons of weapon-grade fissile material will be released as a result of the expected dismantling of large quantities of Russian and US nuclear weapons.

Since the adoption, in 1997, of the Additional Protocol to the 1971 safeguards agreements between states parties to the NPT and the IAEA, inspectors have the right to obtain more information than was previously required, and to request more intrusive physical access to states’ nuclear fuel cycles. They also have greater authority to collect environmental samples for laboratory analysis to assist the IAEA in drawing conclusions about the presence or absence of undeclared nuclear material or nuclear activities at a specific location. Nevertheless, even with universal adherence to the Protocol (hardly achievable in the foreseeable future), more would have to be done to enable the detection of clandestine nuclear programmes. Especially important would be more rigorous export controls, uninterrupted monitoring, reinforcement of the physical protection of nuclear materials and direct access to all relevant information and locations.

In 2003, in pursuance of its counter-proliferation policy, the United States put forward the Proliferation Security Initiative (PSI), also called the Krakow Initiative, after the Polish city where the initiative was launched by the US President. The declared purpose of the Initiative is to interdict and seize weapons of mass destruction (WMD), especially nuclear weapons, their delivery vehicles and related materials, in transit on land, in the air or at sea, in order to prevent them from falling into the hands of states or non-state actors of proliferation concern. International law does not generally stand in the way of interdicting and seizing WMD-related items on the land territory of a state, and aircraft flying over other states may be forced to land and be inspected. However, the situation is different when it comes to the seas.

The most important document codifying the law of the sea is the 1982 UN Convention on the Law of the Sea (UNCLOS), according to which a foreign ship entering a port of a state is subject to the territorial jurisdiction of that state. Local authorities have, therefore, the right to carry out the interdiction and seizure of goods. However, in territorial waters extending twelve nautical miles beyond the land territory of a coastal state, ships enjoy the right of ‘innocent passage’ considered customary law. A passage is ‘innocent’ if it is not prejudicial to the peace, good order or security of the coastal state, irrespective of the cargo carried. This means that the presence of dangerous goods, including weapons, cannot in itself render a passage non-innocent.

In a ‘contiguous zone’ of twenty-four nautical miles from the baselines from which the territorial sea is measured, the coastal state may exercise control only in order to prevent and punish infringements of its customs, fiscal, immigration or sanitary laws and regulations. The area extending 200 nautical miles from the baselines from which the territorial sea is measured may be claimed as an ‘exclusive economic zone’ (EEZ) to conduct control over natural resources, but the jurisdictional competence possessed by the coastal state under the regime of EEZ does not apply to shipments of WMD or related materials. In the high seas
– those portions of the sea not covered by the EEZ, the territorial waters or the internal waters (that is, waters on the landward side of the baseline of the territorial sea) – PSI operations may affect the principle of the freedom of navigation.

Boarding foreign vessels in international waters is generally prohibited, but there are a few exceptions. These concern piracy, the slave trade, engaging in unauthorized broadcasting, refusal to show the flag or illicit trafficking in narcotics or psychotropic substances. Maritime transfer of WMD and of related material or equipment is not exempted. Nevertheless, the flag state may enter bilateral arrangements allowing its vessels to be boarded, and the United States has concluded ship-boarding agreements with a few countries flying flags of convenience. These agreements are based on the principle of reciprocity, although it is hard to imagine Liberians, Belizeans or Panamanians boarding US ships in search of illegal goods. It is noteworthy that such boarding agreements concern only commercial vessels. Warships and other government ships operated for non-commercial purposes enjoy immunity.

In addition, attempts have been made to amend the 1988 Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation (SUA Convention) so as to criminalize sea shipments of WMD and of pertinent material, and to amend agreements concerning international drugs trafficking so as to include WMD proliferation in the definition of illicit traffic. What cannot be legitimately covered by the authority to interdict is the use of force by the boarding party to seize and confiscate the cargo, punish the crew and detain the ship itself. Such drastic measures would have to be decided upon and carried into effect within the existing international legal framework, rather than by individual states. The UN Security Council is the most competent body for dealing with material breaches of obligations that might threaten international peace and security.

Nuclear supplies

For many years, the NPT clause stipulating the safeguards requirement had been applied in a way that led to an absurd situation. The non-nuclear-weapon parties to the NPT – those that have formally undertaken not to acquire nuclear weapons – were subject to safeguards covering all their nuclear activities, current and future, whereas the nuclear activities of states who refused to join the NPT and thus kept their nuclear-weapon option open were controlled only partially, by safeguards that applied exclusively to imported nuclear material or equipment. This meant that a significant part of the nuclear fuel cycle of non-parties could remain unsafeguarded. Several countries concerned about the dangers of nuclear proliferation inherent in this unjustified distinction between foreign and indigenous technology had been seeking to impose on non-parties full-scope safeguards, as comprehensive as NPT-type safeguards, as a condition for nuclear trade. A few suppliers, however, in pursuit of commercial interests, continued providing nuclear material and equipment to countries accepting safeguards only on imported items. They may have thereby contributed, whether deliberately or not, to the recipients’ capabilities to produce nuclear weapons.
In 1992 a group of forty-five nuclear suppliers adopted a common export policy. They agreed that transfer to a non-nuclear-weapon state of nuclear facilities, equipment, components, material and technology, as specified in the so-called trigger list, should not be authorized unless that state had brought into force an agreement with the IAEA requiring the application of safeguards on all source and special fissionable material in its current and future peaceful nuclear activities. In 1993 this agreement was formally recorded. However, it is not binding and contains a loophole: it does not apply to contracts drawn up prior to 3 April 1992. It is possible that the US decision to grant India – a non-party to the NPT – the right to import nuclear material and equipment without accepting full-scope safeguards will bring about a substantial modification of the trigger list.

NWS are not obligated by the NPT to accept international control. They may, however, do so upon request of suppliers of nuclear materials who wish to ensure that their materials are not used for the manufacture of nuclear weapons. A certain number of facilities in the nuclear-weapon states have been submitted to IAEA safeguards on a voluntary basis. Moreover, in the late 1990s, Russia and the United States agreed to submit to IAEA safeguards weapon-origin fissile material designated as no longer required for defence purposes.

What is missing is a mechanism – such as a permanent secretariat or an executive council or an annual meeting of parties – to which complaints, other than those related to nuclear safeguards, could be directed for investigation. The absence of such a body has led certain states to apply unilateral sanctions against suspected but not proven violators of the treaty.

**Peaceful uses of nuclear energy**

The NPT affirms that the parties have the right to develop, research, produce and use nuclear energy for peaceful purposes without discrimination and in conformity with the provisions banning the transfer and acquisition of nuclear weapons (Article IV). This right is considered ‘inalienable’: it is inherent in the sovereign right of states to independent economic development.

All parties are obligated to facilitate, and have the right to participate in, the fullest possible exchange of equipment, materials and information for the peaceful uses of nuclear energy. This obligation covers the scientific and technological spin-off benefits acquired by the NWS from the manufacture of nuclear weapons. The words ‘fullest possible exchange’ do no more than imply that the parties are expected to cooperate to the extent that they are (or declare themselves to be) in a position to cooperate. The NPT parties should also contribute to the further development of the applications of nuclear energy for peaceful purposes, especially in the territories of NNWS party to the treaty, and with due consideration for the needs of the developing areas of the world. The terms ‘territories’ and ‘areas’ may indicate support for regional approaches, whereas the word ‘especially’ has been for many years interpreted as tolerating cooperation in the application of nuclear energy for peaceful purposes with countries that have not adhered to the NPT.
Since in the field of nuclear technology cooperation means assistance (in both power generation and non-power applications) provided by the developed to underdeveloped countries, the use by India (a non-party to the NPT) of a Canadian civilian reactor to produce nuclear weapons-grade plutonium for its 1974 explosion of a nuclear device revealed a serious inadequacy of the NPT. The treaty has not eliminated the right of states to choose their trading partners. Nuclear suppliers are not compelled to provide a specific nuclear technology to any NPT party. It is up to the supplier to decide whether or not the requested supplies are consistent with the basic objectives of the treaty.

Under the NPT, the potential benefits of peaceful applications of nuclear explosions were to be made available by the nuclear-weapon parties to non-nuclear-weapon parties, under appropriate international observation (Article V). This promise was made in exchange for the latter states renouncing the right to conduct any nuclear explosions, as there is no way that a nuclear explosion can be carried out with assurance that it performs no military function. Indeed, nuclear explosive devices that can be used for industrial ends could also be used as weapons. They are transportable, and the amount of energy they are able to release could cause mass destruction. Consequently, any of the non-nuclear-weapon countries that exploded such devices would de facto become a nuclear-weapon power.

It is now recognized that conventional explosives can achieve results equivalent to those of nuclear explosives. Moreover, the health and environmental risks would make nuclear explosions unacceptable to the public in many countries. The prevailing opinion is that peaceful uses of nuclear explosions would entail more risks than benefits. For this reason, there has been no implementation of the NPT clause calling for the conclusion of a special international agreement or agreements to provide nuclear explosion services to non-nuclear-weapon states. The Comprehensive Nuclear Test Ban Treaty (CTBT), signed in 1996, prohibited nuclear explosions for both military and non-military purposes. Nonetheless, to meet a postulate put forward by China, the negotiators agreed that the Review Conference to be held ten years after entry into force of the CTBT should, upon request by any party, consider the possibility of permitting the conduct of underground nuclear explosions for peaceful purposes.

**Disarmament obligations**

In one of the most important articles of the NPT (Article VI), the parties undertook to pursue negotiations in good faith on measures relating to cessation of the nuclear arms race ‘at an early date’ and to nuclear disarmament, and on a treaty on general and complete disarmament. As borne out by the NPT negotiating history, the clause requiring the cessation of the nuclear arms race was understood by the signatories as denoting a package of measures that include, as a minimum, the termination of nuclear-weapon test explosions and a ban on further production of fissile material for weapon purposes.
The clause providing for nuclear disarmament has given rise to sharp controversies. Most NNWS interpret it as an obligation to negotiate the complete and irreversible abolition of nuclear armaments. They argue that the NPT was a bargain struck between NNWS and NWS, to match the self-imposed nuclear arms denial of the former with corresponding acts of the latter, and thereby eliminate the distinction between these two groups of states. Reference is also often made to the Advisory Opinion of the International Court of Justice of 1996, which has acknowledged that there exists an international obligation to achieve nuclear disarmament in all its aspects. The Court has thus made it clear that the parties to the NPT are not only committed to pursuing negotiations on measures ‘relating’ to nuclear disarmament, but they also must negotiate nuclear disarmament and bring these negotiations to a conclusion, as implied in the requirement of ‘good faith’.

Subsequently, also the 2000 NPT Review Conference, in its plan of action adopted by consensus, urged the NWS to accomplish the elimination of their nuclear arsenals. Nevertheless, the NWS have continued to treat the relevant NPT clause as an obligation to negotiate mere reductions or limitations of nuclear weapons. They have ‘unequivocally’ undertaken to eliminate nuclear arsenals, but have added that they would be prepared to do so exclusively within the framework of general and complete disarmament. Ironically, it was because the negotiations for a treaty on general and complete disarmament failed in the early 1960s that the negotiators decided to deal with partial measures of disarmament. It was at that time that the ban on nuclear-weapon proliferation appeared on the disarmament agenda.

General and complete disarmament was never considered a realistic proposition. After it had ceased to be a Cold War propaganda issue for the Soviet Union and the United States, it became a mantra, ‘ritually’ included in UN resolutions or preambles to multilateral arms control agreements. Those who most often asked for such inclusion were neutral/non-aligned counties. They wanted thereby to ensure the continuity of negotiations and agreements, and to use the latter as building blocks of a world free of nuclear weapons. Under the NPT, all parties carry the responsibility for disarmament, but only states possessing nuclear weapons can abolish them – and that before all other weapons have been abolished. This is a rational interpretation of the article in question. For if nuclear weapons were to be eliminated only at the same time as other weapons, there would be no need to singularize them.

**Denuclearized zones**

The NPT does not affect the right of states to conclude regional treaties in order to ensure the total absence of nuclear weapons in their respective territories (Article VII). However, treaty parties that have established nuclear weapon-free zones have reserved the right to allow transit of their air space and of their territorial sea by foreign aircraft and ships carrying nuclear weapons. The frequency and duration of such transits are not limited. Consequently, the declared denuclearization of the zones so far set up cannot be considered as ‘total’.
Duration of the Non-proliferation Treaty

Entry into force

The NPT entered into force in 1970, after the deposit of the instruments of ratification by three states whose governments had been designated as depositaries of the treaty – Russia, the United Kingdom and the United States – and forty other states signatory to the treaty (Article IX.3). The reason for naming more than one depositary was to enable a state not generally recognized (such as the German Democratic Republic, North Korea or North Vietnam) to become party to the NPT by depositing its instrument of ratification with a depositary that had recognized it. Universality of adherence has always been considered essential for the effectiveness of the treaty.

This device of having three depositaries may have facilitated wide adherence to the treaty, but it was not necessary. It is generally understood that neither the signature nor the deposit of any instrument in relation to a multilateral treaty brings about recognition between parties that do not recognize each other. Indeed, within the framework of multilateral treaties open for general adherence, states could even have dealings with a non-recognized regime without thereby officially recognizing it.

Extension

The initial duration of the NPT was set at twenty-five years. Any decision concerning the extension of the treaty for an indefinite period of time or for an additional fixed period or periods was to be taken by a majority of the parties at a specially convened conference (Article X.2). This conference was convened in April 1995. Since the same body was charged with reviewing the operation of the NPT, it was called the NPT Review and Extension Conference.

In May 1995, it became obvious that a majority of the parties, as required by the NPT, supported an indefinite extension of the treaty. The conference then decided, without a vote (although not unanimously or by consensus) that the treaty would continue in force ‘indefinitely’. Three documents closely linked with the Decision on Extension and with each other were adopted, also without a vote. One was about the revised arrangements for reviewing implementation of the NPT, the second about the principles and objectives of non-proliferation and the third about accession to the treaty by the states of the Middle East.

The Decision on Strengthening the Review Process for the treaty provided that Review Conferences should be held every five years, as had been the case during the preceding twenty-five years. A preparatory committee was to meet several times prior to each Review Conference to ‘consider principles, objectives and ways to promote the full implementation of the NPT, as well as its universality, and to make recommendations thereon’ (UN Disarmament Yearbook 1995). The Review Conferences themselves had to look forward as well as back, evaluate the results of the period under review, including implementation of the
parties’ undertakings under the treaty, and identify those areas in which, and the means through which, further progress should be sought.

The Decision on Principles and Objectives for Nuclear Non-proliferation and Disarmament was intended as a yardstick for measuring progress in the fulfilment of the obligations under the NPT. It required that the parties’ programme of action should include: completion of the negotiations on a nuclear test ban treaty; ‘immediate’ commencement and early conclusion of negotiations on a convention banning the production of fissile material for nuclear weapons or other nuclear explosive devices; pursuit of systematic and progressive efforts by the NWS to reduce nuclear weapons globally, with the ultimate goal of eliminating those weapons; and pursuit by all states of general and complete disarmament under strict and effective international control. A resolution sponsored by Russia, the United Kingdom and the United States called upon all states of the Middle East that had not yet done so to accede to the NPT, as soon as possible, and to place their nuclear facilities under full-scope IAEA safeguards.

It is often argued that the obligations assumed under the above documents were preconditions for the indefinite extension of the NPT. These obligations have not been fulfilled. The CTBT has not entered into force, and the production of fissile material for weapons has not been banned by the proposed cut-off treaty (FMCT). In both cases it is the United States that has blocked progress by asserting that effective verification of compliance, as required, is not feasible. Israel has not joined the NPT, while all other states of the Middle East have. Nonetheless, the indefinite extension of the NPT is valid and legally binding. This means that the NNWS have lost a leverage to press for nuclear disarmament.

Withdrawal

Each party to the NPT has the right to withdraw from it if ‘extraordinary events, related to the subject matter of this Treaty, have jeopardized the supreme interests of its country’ (Article X.1). A party decides for itself whether such events have occurred: it does not need to justify its action to any external authority. A notice addressed by it, three months in advance, to all other parties to the NPT as well as to the UN Security Council, with a statement of the events regarded as jeopardizing its security, should suffice. It is not clear which ‘extraordinary events’ the drafters of the treaty had in mind other than the acquisition of nuclear weapons by a potential adversary. Nor is it known what action they expected from the Security Council (North Korea is the first country to take advantage of the withdrawal clause), but the mere possibility of involving the Security Council has a dissuasive value: should the Council find that the withdrawal threatens international peace and security, it may resort to sanctions, including military sanctions.

On the other hand, it does not appear likely that the United Nations would use force against a treaty-abiding NNWS that has decided to withdraw from the NPT not in order to acquire nuclear weapons – for which it may not even
possess adequate means – but for other reasons. The withdrawing state could, for example, claim that a new design of nuclear weapons developed by a nuclear-weapon state jeopardizes its security. In fact, UN sanctions can be triggered by any threat to international peace and security, whether or not a withdrawal takes place.

To ensure that pacta sunt servanda, no country should be allowed to withdraw from the NPT. This is also the view of the IAEA Director General. Alternatively, should formal abolition of the relevant clause prove objectionable, the pertinence of the reasons given for withdrawal would have to be examined and judged by a qualified majority of the parties. The notice of the intention to withdraw would have to be given at least twelve months in advance, as stipulated by the 1969 Vienna Convention on the Law of Treaties. Such a delay would allow time for the complying states to attempt to persuade the state wishing to defect not to do so, and to prepare themselves to deal with the situation that could result from the withdrawal. Withdrawal should not be considered valid if announced during an armed conflict in which the withdrawing party is engaged. An arbitrary decision to withdraw would have to be regarded as a material breach and be treated accordingly. As a minimum, the withdrawing country should be prohibited from making use of the nuclear facilities, materials or equipment acquired from abroad before its withdrawal.

Negotiating such important matters would certainly be a lengthy process. In the meantime, states might be invited to pledge unilaterally (perhaps on the occasion of Review Conferences) either that they would not resort to the withdrawal clause, or that they would do so only under the restrictive conditions outlined above.

Many jurists and politicians consider the right to withdraw from a treaty, unilaterally and without restrictions, as a norm of international law. Some refer to the doctrine of rebus sic stantibus, which makes a treaty inapplicable in case of an unforeseen and fundamental change of circumstances. These doctrines are valid for certain categories of treaties, such as treaties of alliance or friendship or cultural relations. However, they cannot apply to law-of-war or non-proliferation or disarmament obligations, especially those incorporated in multilateral treaties, such as the NPT, the abrupt termination of which by one party may directly affect the security of many or all parties. In other words, the NPT must be irreversible, as recognized by the 2000 NPT Review Conference.

**Enforcement of compliance**

As envisaged in the IAEA Statute (Article XII), cases of non-compliance with nuclear safeguards agreements are to be reported to the UN Security Council and the General Assembly. As no government likes to be pilloried as a violator of legal obligations, publicity may be helpful as a sanction, especially in democratic countries. International organizations may pass condemnatory resolutions. If corrective action is not taken within a reasonable time, the IAEA Board of Governors may direct curtailment or suspension of assistance provided by the
Agency or a member-state and call for the return of materials and equipment made available to the transgressing member. A non-complying state may also be suspended from exercising the privileges and rights of IAEA membership. Since no country enjoys the right of veto in the IAEA Board of Governors, the adoption of decisions to apply such sanctions cannot be ruled out, but their effectiveness is doubtful.

The IAEA provides little direct assistance to states – and certainly not for their nuclear power programmes. As regards possible curtailment of assistance provided by states, such a decision may be adopted, but it is not as unambiguously mandatory under the IAEA Statute as are decisions of the UN Security Council. Even if all deliveries of nuclear items were actually cut off to penalize the offending state, that state might not feel significantly disadvantaged in a world where no country is exclusively dependent on nuclear power. Withdrawal of materials and equipment already supplied would require the voluntary cooperation of the state being penalized – which is unlikely. Moreover, the return of certain nuclear supplies may be exceedingly expensive and dangerous, and the supplier might be unwilling to take them back.

Suspension of IAEA membership does not seem to be an effective measure either. In concrete terms, it would involve: the withdrawal of the right to receive Agency assistance which, as explained above, is not an important sanction; barring access to information possessed by the Agency, which is available to non-members as well; and exclusion from Agency meetings, which cannot be particularly hurtful. Expulsion from the Agency is not provided for. The weakness of the IAEA enforcement mechanism has been illustrated by the case of North Korea, which refused international inspection of certain suspect facilities without provoking immediate and effective sanctions.

It is the UN Security Council that possesses the means necessary to restore international peace that has been broken as a result of arms control violations. The determination to resort to these means was expressed in the 1992 statement by the President of the Security Council, on behalf of the members of the Council, to the effect that the proliferation of WMD would constitute a threat to international peace and security and that appropriate action would be taken to prevent it. Significantly, such action would affect all states breaking the rule of non-proliferation – not only parties to the relevant agreements – even though the ban on the proliferation of nuclear weapons is not yet a rule of customary international law binding on all states. However, a statement by the President of the Security Council does not have binding legal effect. To have such effect, it would need to be converted into a formal decision of the Council. In addition, the term ‘proliferation’ would have to be unambiguously defined.

Enforcement of compliance with the NPT would require some radical changes in the structure and working of the main organs of the United Nations as well as of the IAEA. In particular, the force of UN General Assembly resolutions would have to be enhanced, the veto power of Security Council permanent members would have to be restricted or ended, and the prerogatives of the IAEA would have to be widened and their decisions made mandatory. Such changes,
with implications beyond arms control, would certainly be regarded by many states as not feasible in the foreseeable future.

If response to a violation of the NPT is to be effective, all or most parties must act in solidarity. However, solidarity action is not always possible, mainly because many countries are opposed to applying sanctions that have not been decided upon by competent international bodies. If collective enforcement measures against a culprit state were to be applied without the requirement that a formal international decision be taken in each individual case, such measures would have to be agreed in advance.

In devising possible responses, a distinction must be made between different types of violations. Violations can vary from technical to material breaches: from inaccurate or incomplete reporting to non-observance of procedural clauses, to offences resulting from misunderstanding, to violations of provisions essential to the accomplishment of the object or purpose of the NPT, including obstruction of the safeguards system. Violations can be committed by governmental authorities, by non-governmental institutions or even by individuals, with or without the consent or knowledge of the authorities. Further differentiation is necessary between intentional and unintentional breaches. The latter – usually easier to remedy – may result from sheer negligence. Some breaches may be reversible, others not.

The most appropriate approach would be to draw up a list of agreed responses to possible violations of the NPT and add it to the complex of obligations contracted by the parties. These responses, which must be proportional to the offences, could include diplomatic, financial, economic and other measures, with the exception of the use of force, as it is only the UN Security Council that may decide military sanctions. Responses would have to be gradated from mild to severe, so as to increase pressure on the violator over time and finally force him to mend his ways. The conditions for transition from one response to another would have to be spelled out.

The mere existence of a list of predetermined sanctions could fulfil the function of deterrence and reduce the probability of violation. A government that declined to react to violations and abstained from efforts to uphold the validity of the NPT would be in breach of its obligations and would expose itself to both international and domestic criticism.

Obviously, compliance cannot be ensured by sanctions alone. The stronger and the richer the country, the easier it may be for it to withstand outside pressure. Nonetheless, it is essential that violations of the NPT should not be ignored, and that no country, large or small, developed or undeveloped, should be immune to deserved penalties. A step in this direction was taken in 2004 with the adoption of UN Security Council Resolution 1540, which requires all governments to put in place ‘appropriate, effective’ measures to deny access to biological, chemical and nuclear weapons, their delivery systems and related materials to terrorists and other non-state actors. Nuclear accounting and control are to be established in those states that have not yet done so – if necessary, with the assistance of other states.
Resolution 1540 was passed (by consensus) under Chapter VII of the UN Charter, which deals with threats to international peace and security and provides for sanctions in case of non-compliance. It is therefore binding on all UN members, parties and non-parties to the NPT. A committee of the Security Council, set up for the brief period of six months, was to report on the fulfilment of the obligations. However, no standards have been formulated to assess the degree of their implementation; neither are the consequences of non-compliance with the resolution spelled out.

The scope of the resolution is narrow. It deals mainly with measures to be taken against potential nuclear proliferators (non-state actors) rather than against actual proliferators (state actors). It does not mention the disarmament obligations of the NWS, even though it is the non-fulfilment of these obligations that undermines the integrity of the NPT.

Security assurances

Except for a reference to the obligation of all states under the UN Charter to refrain in their international relations from the threat or use of force, no specific obligation has been laid down in the NPT to ensure the security of NNWS. However, states which have renounced their claims to nuclear weapons, including those enjoying the protection of nuclear-weapon powers, have all along insisted on obtaining security assurances, considered by many to be an essential component of an effective nuclear non-proliferation regime.

Positive assurances

As early as 1968, under the pressure of NNWS, the UN Security Council adopted Resolution 255, by which the Soviet Union, the United Kingdom and the United States pledged immediate assistance, in accordance with the UN Charter, to any NNWS party to the NPT that was a ‘victim of an act or an object of a threat of aggression’, in which nuclear weapons were used. These pledges, usually referred to as ‘positive assurances’, were found insufficient, as they merely reaffirmed the duty of UN members to provide assistance to a country which has been aggressed, irrespective of the type of weapon used in aggression. Moreover, China and France, the remaining nuclear-weapon powers not yet parties to the NPT, were not bound by this resolution, which was adopted by majority vote.

Negative assurances

States that have forsworn nuclear weapons under the NPT have also demanded formal assurances that nuclear weapons would not be used against them. Such assurances – usually called ‘negative’ because they amount to a non-use obligation, as distinct from assurances containing an obligation to assist, as described above – were given to states establishing nuclear weapon-free zones. Negative
security assurances were also contained in statements made by the nuclear-weapon powers in connection with the 1978 and 1982 Special Sessions of the UN General Assembly devoted to disarmament, as well as on other occasions. However, they were conditional, phrased differently by different countries, and merely declaratory.

For years, efforts have been made in various forums to develop negative security assurances that would be uniform, unconditional and legally binding. The UN General Assembly has adopted several resolutions recommending the conclusion of an international convention on the non-use of nuclear weapons.

In 1994, eleven non-aligned members of the Conference on Disarmament submitted a draft protocol on security assurances. The NWS would pledge not to use or threaten to use nuclear weapons against NNWS, the latter being defined as all states other than those falling under the NPT definition of a nuclear-weapon state. In the case of nuclear aggression or threat of such aggression against a NNWS, the necessary help and assistance would be provided by a conference of the parties to the NPT and the UN Security Council. The proposed protocol was to become an integral part of the NPT. In fact, it would have been only indirectly related to this treaty, as it would provide negative security assurances to non-parties to the NPT as well. The protocol was to enter into force under the same conditions as the NPT, that is, even before China and France had ratified it.

**Combined assurances**

Only in 1995, a few days before the opening of the NPT Review and Extension Conference, did the great powers decide to jointly sponsor UN Security Council Resolution 984, which combined positive and negative security assurances. This resolution was adopted unanimously.

The new positive assurances, now given by the five declared nuclear-weapon states (including China and France), are more specific than those included in Resolution 255. They provide that, in response to a request from a state victim of an act of nuclear aggression, or object of a threat of such aggression, Security Council members will help to settle the dispute and restore international peace and security, as well as take ‘appropriate’ measures, individually or collectively, for technical, medical, scientific or humanitarian assistance. In addition, appropriate procedures may be recommended by the Security Council regarding compensation under international law from the aggressor for loss, damage or injury sustained as a result of the aggression.

With regard to negative assurances, no progress was achieved. Having declared the obvious – that aggression with the use of nuclear weapons would endanger international peace and security – Resolution 984 simply took note of the statements made by the nuclear-weapon states, in which the conditions for non-use of such weapons were formulated. France, Russia, the United States and the United Kingdom reaffirmed that they would not use nuclear weapons against non-nuclear-weapon states parties to the NPT, except in the case of invasion or
other attack on them, their territories, their armed forces or other troops, their allies, or on a state to which they have a security commitment, carried out or sustained by such a non-nuclear-weapon state in ‘association or alliance’ with a nuclear-weapon state. For Russia, the above statement confirmed the reversal of the policy of no-first-use of nuclear weapons, advocated until 1993, and the official adoption of the doctrine of nuclear deterrence. Only China undertook not to use or threaten to use nuclear weapons against NNWS or nuclear weapon-free zones at any time and under any circumstances. This undertaking applies to NNWS party to the NPT or NNWS that have undertaken comparable internationally binding commitments not to manufacture or acquire nuclear explosive devices.

Resolution 984 refers (as did Resolution 255) to Article 51 of the UN Charter dealing with the right of self-defence. This Charter provision does not have direct relevance to providing security assurances to non-nuclear-weapon states, but a reference to it may serve to legitimize the use of nuclear weapons in countering any armed attack, including one carried out solely with conventional means of warfare, as if the right of self-defence were unlimited.

It is doubtful whether at any time during the Cold War the nuclear weapon powers seriously contemplated renouncing the use of nuclear weapons. It is surprising, however, that after the termination of the Cold War confrontation, the elimination of the US and Soviet intermediate-range nuclear forces, the withdrawal of most tactical nuclear weapons to central locations and the beginning of the strategic weapons dismantlement the nuclear postures have not changed. The posture adopted by the United States appears to have hardened, as it envisages pre-emptive strikes with nuclear weapons kept on high alert, even against non-nuclear-weapon states. And yet each NWS possesses conventional armed forces quantitatively and/or qualitatively superior to those of its potential non-nuclear-weapon adversaries and would not need to resort to nuclear weapons to stop an aggression launched by the latter.

The argument that the option of using nuclear weapons against NNWS must be retained to react to a possible use of chemical or biological weapons is not convincing, for these weapons do not have the capability to produce devastation on the same scale as nuclear weapons. There exist ways of protection against their use, whereas there are no methods of defence against a nuclear attack. Moreover, should a chemical or biological threat emerge, a massive response with up-to-date conventional weapons would suffice. Possession of nuclear arsenals has not prevented terror attacks on nuclear-weapon powers, nor has it stopped or reversed the nuclear programmes of North Korea (Hayes) or Iran (Lodgaard).

The NWS have declared that their nuclear weapons are not targeted at any state. All the same, the nuclear security assurances they have given to NNWS are neither unconditional, nor uniform, nor legally binding. Resolution 984 stated that the issues raised in its provisions remained of continuing concern to the Security Council. This statement could serve as a point of departure for negotiating a more meaningful international instrument, such as a protocol to the NPT.
Conclusion

The NPT has established a norm of international behaviour in the nuclear field. The treaty is therefore of paramount importance for arms control: it constitutes an obstacle to nuclear anarchy and makes it possible for the nuclear-weapon powers to engage in significant reductions of their arsenals. Despite the asymmetry of the rights and obligations of the NWS and NNWS, the NPT has attracted a record number of adherents: by the year 2007 only India, Israel, Pakistan and North Korea had remained outside the NPT.

Nevertheless, in many respects the NPT is becoming superannuated. To continue playing its original role of an arms control-cum-disarmament measure, the Treaty must be adapted to the changing political and security circumstances. One way of bringing it up to date is through amendments. This is true of all treaties, but the amendments provision of the NPT (Article VIII) is particularly complicated. It requires a majority vote of all the parties, including the consent of the nuclear-weapon parties and of those other parties members of the IAEA Board of Governors on the day the amendment is circulated. Whereas the nuclear-weapon powers might agree to certain changes in the text of the NPT, it is not likely that in the Board of Governors – a large and heterogeneous group – unanimity could be obtained among NPT parties on any significant modification of the treaty.

Moreover, since unanimity or even consensus is not needed to amend the NPT, the amendment process may result in a mosaic of legally binding commitments. For those parties opposing any changes, the rights and obligations would remain unchanged. For those accepting all or only certain proposed amendments, the rights and obligations would differ. Some adopted amendments may fail to be ratified. In such a situation, the treaty could start disintegrating. This is why, in their endeavours to strengthen the NPT, the parties may find it advisable to negotiate not only legally binding interpretations, but also politically binding understandings of the provisions of the treaty. To conduct such negotiations, a special meeting of the NPT parties would have to be convened. Review Conferences held once every five years would not suffice.

Notes

1 In accordance with the deal, only civilian nuclear plants and materials would be subject to IAEA controls.
2 Pakistan – another self-declared nuclear-weapon power – has already demanded international treatment similar to that promised to India.
3 Then the Soviet Union.
Of the plethora of gods in Norse mythology, the most popular has been Thor. It was believed that when he drove his chariot a thunderstorm occurred and when he swung his hammer lightning struck. Thor was deemed a ‘good guy’, not because he was gentle, joyful, pure, and innocent like Balder (who was generally considered to be the best character of the gods), but because he was strong and a protector of both gods and human beings (Encyclopedia Mythica). Loki, by contrast, was the ‘bad guy’ of the Norse pantheon. Though not exactly an evil Lucifer, he was cunning and extremely envious. It was he who was responsible for Balder’s death. Excluded from the good company, Loki was continually looking for ways to disrupt the harmony among the gods.

In the nineteenth century a saying emerged that was an expression of justice based on the opposition of the characters of these two gods: ‘The same law for Loki as for Thor’. This reflected the belief in the equality of all citizens before the law – which had already become a fundamental principle of modern law. It was considered wrong and unjust to act on the basis of one law for the good guy and another for the bad guy.

The question of equality or lack thereof before the law is critically relevant in international relations today. Inequality of rights and obligations has been an inherent part of the non-proliferation regime. This is the case particularly since the inception of the Non-proliferation Treaty (NPT) in the 1960s, which established a distinction between nuclear and non-nuclear-weapon states. The NPT conferred the temporary right to possess nuclear weapons to the states that had tested nuclear weapons prior to 1 January 1967, and defined all other states as non-nuclear-weapon states. Thus, in a sense, the treaty froze an arbitrary historical moment, although the permission for some countries to possess nuclear weapons was not intended to last indefinitely.

Under Article VI of the NPT, parties to the treaty pledged: ‘To pursue negotiations in good faith to achieve effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament under strict and effective international control’. The parties’ obligations as regards nuclear disarmament are also expressed in the preamble to the treaty, which specifically mentions the negotiating of a comprehensive test ban treaty. Furthermore, Article VI contains an obligation to pursue negotiations on a treaty
on general and complete disarmament under strict and effective international control.

The NPT was the most important outcome of what was arguably the first major change of mode in multilateral efforts to curb nuclear proliferation. During the 1950s, the objective of disarmament negotiations within the framework of the United Nations had been ‘general and complete disarmament’. This formula referred to an agreement by which all states would disarm down to the same level, and that disarmament would include all weapon types: conventional as well as weapons of mass destruction. With specific regard to nuclear weapons, one solution stood out as offering the best means to achieve disarmament. This was a package consisting of a ban on nuclear testing and a ban on the production of fissile materials for military purposes. The Cold War climate of the 1950s, however, made it politically unfeasible to realize the ambitious objectives of general and total disarmament.3

Growing concern about the so-called nth nation problem resulted in a shift in the overarching objective of international negotiations – from disarmament to arms control. The first outcome of this redirected aim was the Partial Test Ban Treaty in 1963. This was followed by the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies in 1966, and the Non-proliferation Treaty in 1968. The change of approach from general and complete disarmament to partial measures designed to curb nuclear dissemination was highly contentious.

It provoked France to withdraw from the Eighteen Nation Disarmament Committee (ENDC) in Geneva, which was the precursor to the Conference of the Committee on Disarmament (CCD). The French maintained that the partial Test Ban Treaty as well as the NPT would simply represent measures to maintain the privileged position of the two superpowers. They argued that general and complete disarmament was the only acceptable approach to disarmament negotiations, and that limited arms control measures were insufficient and imbalanced (Forland 1997: 259–60). China held much the same view. It is worth underlining that the change of mode allowed the French and Chinese to justify their nuclear policies with reference to the unacceptability of inequality. Neither of these two nations would become party to the NPT until the early 1990s, even though the NPT recognized them as nuclear-weapon powers.

As late as October 1967, India’s ambassador to the ENDC said that a halt in the production of fissile materials for military purposes was the only possible basis for a NPT (ibid.: 299). India had several misgivings and was greatly concerned about the imbalance of obligations. Towards the end of the formative NPT negotiations, India essentially withdrew from the ENDC (ibid.: 258), in subsequent decades becoming the fiercest critic of the imbalance of the non-proliferation regime.4 Many other countries waited a long time before signing the treaty, even several of those who had participated in its formulation.

In the 1970s, Alva Myrdal, former head of the Swedish delegations to the ENDC and a later Nobel Peace Laureate, published The Game of Disarmament (Myrdal 1977), strongly criticizing the superpowers for not honouring their
commitments to disarmament. She felt misled and was particularly bitter that a partial test ban had been negotiated in lieu of a comprehensive one. Every NPT Review Conference has been marked by the unresolved tensions resulting from the first major change of mode with regard to disarmament.

The shift in US policy from an emphasis on non-proliferation to counter-proliferation clearly represents another major change of *modus operandi* in the fight against the spread of nuclear weapons. This shift began with the Counter-proliferation Initiative launched by the Clinton administration in 1993, reaching a mature stage in the aftermath of the terrorist attacks of 11 September 2001. Then the George W. Bush administration made ‘the combat against weapons of mass destruction’ a core element of national strategy. What George W. Bush has called the ‘pre-emption doctrine’ took the fight against the spread of nuclear weapons to an altogether new level of which the war on Iraq is the ultimate case in point.5

This article traces the development of the US counter-proliferation policy from its inception to the present. It focuses on the threat perception upon which the policy has been based as well as its means, and the consequences for the non-proliferation regime, the latter being assessed in view of the result of the 2005 NPT Review Conference.

The new threat perception of the 1990s

The year 1991 was a watershed with regard to US threat perceptions. Two events precipitated this change of view: the disintegration of the Soviet empire, and the Gulf War in Iraq. The fear of a large-scale war between the superpowers receded, to be replaced by the possibility of fissile materials and nuclear weapons expertise being exported legally or illegally from the former Soviet Union for use in clandestine nuclear programmes in other countries. Moreover, experiences from the Gulf War highlighted the eventuality of authoritarian regimes having access to chemical and nuclear weapons in addition to ballistic missiles. Within a few years, the uncertainty about WMD (weapons of mass destruction) programmes in Iraq, combined with the continuing development of nuclear programmes in North Korea, Libya and Iran, would be decisive factors in establishing ‘rogue states’ as a primary threat to US security.

A noteworthy immediate consequence of the Gulf War was the bi-partisan agreement on the US 1991 Missile Defence Act. This Act represented a historic compromise with regard to the development of anti-ballistic missile systems and had substantial repercussions for US arms control policy (see Jensen 2005; also McMahon 1997). The reason for this was that it called into question the perpetuity of the 1972 Anti-ballistic Missile Treaty (ABM) that had been signed by the United States and the Soviet Union as part of the first SALT agreement. The ABM Treaty was indeed one of the high points of détente and had been a cornerstone of the doctrine of mutual and assured destruction.

During the Clinton administration’s first year in power, ‘rogue states’ were confirmed as the new major threat to US security and interests. This threat
analysis underlay both the 1993 Bottom-up Review and the 1993 Counter-proliferation Initiative (CPI). The latter was most fully presented to the general public in an article by National Security Adviser Anthony Lake, published in *Foreign Affairs* in 1994.

‘Rogue states’ was not a new 1990s concept: for several decades, it had already been used interchangeably with similar designations such as ‘pariah’ states and ‘outlaw’ states, to designate states characterized by human rights violations and brutal repression (Litwak 2000: 49–50). Litwak has shown that in the late 1980s these internal criteria were replaced by external criteria, so that ‘rogue states’ now referred to states that violated important international norms. ‘Rogue state’ designation involved three main criteria: that the state had an illegal programme for the production of WMD, that it supported international terrorism and used terror as a political means, and third, that the state represented a threat to US interests or security (ibid.: 49).

In fact, Lake’s 1994 article alternated between ‘outlaw’, ‘backlash’, and ‘rogue’ states, as he employed internal criteria as well as external ones. For although he singled out the rogue states’ feeling of insecurity in international society and pointed to their quest for weapons of mass destruction and missile delivery systems, he also underlined their (domestic) suppression of human rights and their promotion of radical ideologies. The Lake article identified Cuba, North Korea, Iraq and Libya as ‘rogue states’.

One core aspect of the Clinton administration’s threat analysis was that ‘rogue states’ were perceived as threats to regional stability, and their quest for weapons of mass destruction as a means to dominate their regions (Jensen 2005: 76–80). After the 1994 elections, the Republican majority in Congress disagreed with the administration’s position, arguing that ‘rogue states’ represented a global threat (ibid.). This disagreement was reflected in the policy of the two sides with regard to anti-ballistic missile defence, and resulted in the curtailing of the bi-partisan compromise from 1991. While the Clinton administration sought to develop a theatre missile defence system, the Republicans insisted that only a national missile defence system would suffice. President Clinton vetoed the Ballistic Missile Defence Act of 1995, which had been passed by Congress and which contained plans for both a tactical and a national anti-ballistic missile defence (ibid.: 81).

In 1996, the Clinton administration launched its own programme – the 3+3 Deployment Readiness Plan, which envisaged the future national deployment of anti-ballistic missile capacities limited to one site in accordance with the ABM Treaty (ibid.). Discontent with this policy and questioning the intelligence upon which it was based, a Senate Commission was established to assess the ballistic missile threat to the United States and to examine all available intelligence about threats to the United States. The Commission became known as the Rumsfeld Commission, after its chairman Donald Rumsfeld, who then chaired the Advisory Committee to Congress on security policy. Another commission member was the neo-conservative Paul Wolfowitz, former assistant defence secretary in the George Bush (Sr) administration.
In 1997, Rumsfeld, Wolfowitz and former US Defense Secretary Dick Cheney launched the Project for a New American Century, arguing for a regime change in Iraq, even if this required military means. The Rumsfeld Commission continually referred to North Korea, Iran and Iraq as ‘hostile nations’, and maintained that these states were developing ICBM capacities which in five to ten years could threaten the US homeland. In short, the Commission concluded that the threat from rogue states was broader, more mature and developing faster than previously thought (ibid.: 85–7; Mann 2004: 240–1).

Although the Clinton administration stopped using the ‘rogue state’ designation altogether in 2000 (Litwak 2003: 84), Clinton had already yielded to Republican pressure and signed the 1999 National Missile Defence Act, thereby endorsing plans for the deployment of a national anti-ballistic defence system when possible (Jensen 2005: 90–1). Clinton explicitly justified signing the Act by referring to ‘the growing danger that rogue states may develop and field long-range missiles capable of delivering weapons of mass destruction against United States and our allies’ (quoted from Jensen 2005: 91).

The counter-proliferation initiative

When Secretary of Defense Les Aspin launched the Counter-proliferation Initiative on 7 December 1993 at the US National Academy of Sciences, it was exactly forty years since Dwight D. Eisenhower’s pioneering Atoms-for-Peace speech at the United Nations. The upshot of Eisenhower’s initiative was the creation of the International Atomic Energy Agency (IAEA) in 1957. Initially, the idea had been that Atoms for Peace would contribute to what was at the time called ‘disarmament’ by transferring fissile material from military to civilian purposes. Thus the new agency had been conceived of as a ‘pool’ for fissile materials as well as natural uranium. This idea, however, was abandoned in the course of negotiating the statutes of the IAEA (Fischer 1997a: 10–11; Forland 1997: 35–41).

From the outset the IAEA was marked by the Janus face of nuclear energy. The agency was established to promote nuclear research and industrialization on a global basis. Its function reflected the 1950s belief in development aid, as well as view of nuclear energy as the latest and most advanced means for modernization. The industrialized world was to aid the developing world to benefit from this new source of energy (Forland 1997: 19–21). It is no surprise that Atoms for Peace became immensely popular in many parts of the world as a harbinger of the good things to come (ibid.: 21; Scheinman 1987: 59). No wonder either that the developing countries have subsequently clung to what they see as their right to acquire the most advanced nuclear technology.7

Nevertheless, the IAEA statutes did recognize the danger inherent in spreading nuclear installations and materials around the world. Article X stipulates that the IAEA Board of Governors must develop safeguards against the diversion of nuclear materials to military purposes. The first IAEA Safeguards Document (INFCIRC/26) dates from 1961. It was reviewed and replaced by a second one
These first-generation safeguards were in principle linked to IAEA assistance, but in practice, they were triggered by export agreements in cases where recipient countries agreed to IAEA safeguards. When the IAEA was given the task of verifying compliance with the NPT, a so-called full scope safeguards system (INFCIRC/153) was negotiated, establishing safeguard procedures that extended to the entire nuclear cycle.

Since neither all suppliers nor all recipient countries were parties to the NPT, additional export control agreements were negotiated among members of the Zangger Committee and the Nuclear Suppliers Group. The safeguards and export control arrangements of the 1970s were important preventive non-proliferation tools – but they did not provide a foolproof control system. They reflected the politically possible rather than the technically perfect system. Although safeguards and export controls had been strengthened through a gradual process from the 1960s to the 1980s, there was room for considerable improvement.

Against this background it should not have been surprising that Iraq’s clandestine nuclear programme had gone undetected by the IAEA. The revelation of the scope of the Iraqi programme was an eye-opener with many repercussions. It set in motion negotiations for a strengthened safeguards system – the Additional Protocol – and led to an immediate strengthening of the guidelines of the Nuclear Suppliers Group. These were traditional non-proliferation measures. It also contributed to a shift in focus from non-proliferation to what Leonard S. Spector (1995) has called post-proliferation measures. According to Spector, many US strategists at the time distanced themselves from non-proliferation, believing that nuclear spread was inevitable and that the United States would have to address proliferation after it had taken place.

The most radical elements of the strategic community wanted new defence measures, and in particular, a national anti-ballistic defence system. Criticism of the IAEA was a prevalent argument (Jensen 2005: 19). Even many arms control experts redirected their attention from non-proliferation to post-proliferation. They differed from the radicals, however, in their continued support for non-proliferation. Moreover, they did not hold that nuclear spread was inevitable – only likely (Spector 1995: 68). Spector saw the Pentagon’s Counter-proliferation Initiative as part of the post-proliferation shift, although Pentagon officials did not state that non-proliferation measures were ineffective or that proliferation was inevitable. The Pentagon’s CPI was in effect its answer to post-proliferation contingences (ibid.: 67). Although the CPI was apparently triggered by developments in the North Korean nuclear programme, it can be seen as an answer to a situation in which proliferation had come to be seen as a more general problem.

In July 1993, President Clinton directed the Defense Department to prepare the CPI, while simultaneously warning in a series of speeches that the United States was prepared to use force to prevent proliferation in ‘rogue states’ (Powaski 2000: 223). The message was aimed at North Korea, whose nuclear programme was causing a crisis in US relations. The US military engagement on the Korean Peninsula was a legacy of the Korean War, which had ended with
an Armistice Agreement but no peace treaty. Since 1953 the United States had been formally committed to defending the independence of South Korea, and US troops were posted there for this purpose. By all accounts, the prospect of a North Korean army equipped with nuclear weapons had a dramatic effect on US threat perceptions (Perry 1999). Such a scenario did not appear totally out of the blue in 1993, however.

The North Korean nuclear programme went back to the 1950s. From the mid-1970s, North Korea had allowed the IAEA to inspect a small research reactor, and due to Soviet persuasion or pressure, North Korea had joined the NPT in 1985 (Carlin 1994: 132–3). Nevertheless, by the late 1980s there was widespread fear that the country had produced enough plutonium for a couple of bombs. By that time, the North Koreans had the necessary infrastructure in place for the production of nuclear weapons and delivery means, including a programme of missiles designed for nuclear weapons (Drennan 2004: 165). The country’s reluctance to honour its obligations under the NPT gave further cause for concern. In fact, North Korea had not signed the standard INFCIRC/153 safeguards agreement with the IAEA. However, in 1991–92 North Korea signed several agreements which, had they been implemented, would have led to a dismantling of its nuclear-weapons programme.

The agreements included the Joint Declaration for the Denuclearization of the Korean Peninsula with South Korea. A Joint Nuclear Control Commission was set up to verify the agreement. At this stage, the North Koreans also agreed to implement IAEA safeguards as the US announced its withdrawal of tactical nuclear weapons from Asia (as well as Europe) (ibid.: 166; Carlin 1994: 132–5). IAEA inspectors conducted several ad hoc inspections to verify the declaration concerning nuclear activities put forward by North Korea in accordance with standard safeguards procedures. It was when the inspectors discovered two undeclared sites, which they suspected were waste stores, that relations between the Agency and North Korea became strained.

Again in accordance with INFCIRC/153, the IAEA Board of Governors called for special inspections of the two sites. North Korea refused and announced its intention to withdraw from the NPT. The IAEA Board then referred the case to the UN Security Council. The North Koreans had already made it clear that sanctions would be regarded as an act of war. The crisis lasted until former President Jimmy Carter on his own initiative went to Pyongyang in June 1994 to engage in direct talks with Kim Il Sung. The upshot was the Agreed Framework of 21 October 1994, which entailed a future dismantling of the North Korean nuclear programme as well as a number of significant concessions on the part of the United States (Drennan 2004: 191–5).

At the outset of the crisis, US policy had been to back the IAEA’s demand for special inspections as a precondition for negotiating with the North Koreans. William M. Drennan interprets this policy line as a way to buttress the international norm against nuclear proliferation, as well as to help the Agency to regain some of the credibility that had been lost when the Agency failed to discover the secret Iraqi programme (ibid.: 185). However, as the crisis unfolded,
the Pentagon developed an alternative policy line. In the Pentagon’s view, the North Korean nuclear programme represented a regional security problem that would not be solved through inspections. William J. Perry, who replaced Les Aspin as Secretary of Defense in 1994, makes it clear that the Pentagon’s political leaders came to the conclusion that the only way to solve the problem was to eliminate the whole programme (Perry 1999: 127).

Plans for an attack on the reactor site were worked out, but were put aside due to fears that such an attack would provoke the North Koreans to go to war (ibid.: 128–9). Instead a plan was put to President Clinton to increase the US military forces in South Korea. Apparently, the aim was still to eliminate the North Korean nuclear programme, but it is not clear from Perry’s account by what means the Pentagon thought to achieve this goal. What is clear is that the Pentagon was planning for a war, and willing to risk a war in order to ‘block the North Koreans from getting a nuclear arsenal’ (ibid.: 131). Carter’s deal with Kim Il Sung seemingly solved the problem.

It was in the midst of this crisis that the CPI was launched. Defense Secretary Les Aspin presented it as a response to the emerging threat of ‘rogue states’ and terrorists equipped with nuclear, chemical or biological weapons. He linked the emerging threat both to the security situation in the Russian Federation and to the general diffusion of nuclear technology, specifically mentioning the regional challenge that ‘powers such as Saddam Hussein’ represented:

The old nuclear danger we faced was thousands of warheads in the Soviet Union. The new nuclear danger is perhaps a handful of nuclear devices in the hands of rogue states or even terrorists groups. The engine of this new danger is proliferation.

(Aspin 1993)

The CPI was a supplement to the Bottom-up Review (Aspin 1993), which had identified ‘rogue states’ as the new major threat to US security, and which represented a reorientation of US defence strategy from Cold War to regional contingencies (Carter 1996). Moreover, it provided a plan for the restructuring and modernization of US conventional forces. An ‘essential’ aspect of the CPI, according to Aspin’s launch speech, was to seek a modification of the ABM Treaty which would permit the development and testing of a theatre missile defence system (Aspin 1993).

In other respects, the CPI was so vaguely formulated that it raised more questions than it answered. One core question was whether it was meant to replace non-proliferation measures, as some strategists wanted. To clarify the difference, the US National Security Council issued a definition of non-proliferation and counter-proliferation. Counter-proliferation was defined as activities by the Department of Defense to combat proliferation, which included traditional non-proliferation and arms control measures. It made it clear that the objective of the CPI was to deter and defend against nuclear, biological and chemical (NBC) warfare and missile attacks, including offensive means. The aim was to be able
to ‘seize, disable, or destroy an adversary’s NBC and missile assets if necessary, in a crisis headed towards war or in a conflict that had begun’ (quoted from Schneider 1999: 47).

The last sentence was widely interpreted as meaning preventive strikes or wars. Before leaving office President George Bush (Sr) had in fact directed the Defense Department to develop ‘new capabilities to defend against proliferators, including capabilities for pre-emptive military action’ (quoted from Schneider 1999: 45). Did the CPI still encompass pre-emption? The Europeans certainly thought so (Spear 2003; Litwak 2003: 82). According to Lawrence Friedman, counter-proliferation was ‘normally interpreted as a form of pre-emption’ (quoted from Spear 2003: 216). It would seem that the military personnel of the US Defense Department shared this apprehension. Sokolski (2001: 92–3) maintains that the military’s response to the CPI was lukewarm because of the legal, moral and operational hazards involved in using military forces against nuclear installations without any prior overt aggression.

There were also budgetary reasons for the misgivings. While the Defense Department budget was being cut, an indication that the Cold War was over, it was simultaneously being asked to raise money to fund counter-proliferation measures (ibid.: 92). This budgetary change came concomitantly with the redirected threat perception. The Department of Defense had been given a new mission aligned with the new threat analysis. As William Perry wrote with regard to the North Korean crisis, ‘this was not just another proliferation issue to be dealt with by our diplomats and the IAEA’ (Perry 1999: 126).

In fact the CPI entailed a shift of political power from the US State Department to the Defense Department. It was a shift that evidently caused considerable inter-agency tension, and the need for the National Security Council to define counter-proliferation in relation to non-proliferation can be seen as a reflection of this tension. Janne E. Nolan (1999) argues that domestic policy differences also impacted on the outcome of the Nuclear Posture Review that was conducted in 1993–94. Even though the officials in charge of the review were determined to question fundamentally the role and purpose of nuclear weapons in US strategy, the review did not result in any significant changes in the country’s nuclear-weapon policies (Nolan 1999: 35–62). Nolan explains the outcome partly with reference to lack of presidential leadership, as well as bureaucratic inertia in the Pentagon (ibid.: 103–9).

The outcome meant that the first-use option was maintained, which not least implied the possibility to deter potential aggressors by threatening to use nuclear weapons. She claims that this policy was justified by reference to the new threat that regional powers represented (ibid.: 67). As a consequence, the operational and political importance of nuclear weapons for US strategy was reinforced (ibid.: 86).

In 1996, Assistant Secretary of Defense Ashton B. Carter explicitly denied that counter-proliferation capabilities were being devised for pre-emptive attacks on proliferators (Carter 1996). Part of the institutionalization of the CPI was the creation of a new post of assistant secretary for nuclear security and counter-
proliferation, and Carter was assigned to this post (Sokolski 2001: 91). Previously, he had been a member of the Defense Science Board, which, during the George Bush (Sr) administration, had analysed how the United States might respond to threats of attack by weapons of mass destruction and nuclear missiles (ibid.: 90).

He had also contributed to New Nuclear Nations: Consequences for U.S. Policy (Blackwill and Carnesale 1993), a collection of articles discussing how the United States might respond if new nuclear-weapon states threatened US interests. Carter’s main point was to underline the importance of intelligence if a pre-emptive strike against foreign nuclear installations were to succeed (ibid.: 216–50). The following quote from one of the articles in the volume conveys the spirit of the book: ‘if deterrence fails, and if Washington concludes that nuclear weapons are simply too dangerous to be possessed by some governments or some leaders, exhaustion of diplomatic remedies could compel the United States to consider direct military action’ (Zelikow 1993: 190).

Carter’s statement in 1996 was a response to academics who had criticized the CPI and especially the pre-emptive element. Some had questioned both the morality and the operationality of pre-emptive actions. There was concern that the nuclear taboo might be broken, not least because that might encourage states to acquire nuclear weapons (Sokolski 2001: 93; Schneider 1999: 48–51). In addition, some critics feared that the limited focus of the CPI could undermine the universalist principle of non-proliferation. Furthermore, it was alleged that the threat analysis underlying the CPI failed to take into consideration the recent successes of traditional non-proliferation efforts (as above; see also Spector 1995: 69). These efforts included the indefinite extension of the NPT, the roll-back of South Africa’s nuclear weapons, the dismantling of nuclear weapons in the successor states to the Soviet Union, a notable increase in NPT membership and the negotiation of a considerably strengthened system of safeguards.

Carter’s statement probably also mirrored the first phase’s focus of implementing the CPI. Here the focus had been on analysing the lessons from the Gulf War in order to equip US and allied forces with capabilities that would enable them to meet potential aggressors equipped with weapons of mass destruction. The Gulf War had demonstrated that US forces were inadequately prepared for fighting a war in which chemical weapons might be used, and an important objective of the CPI was to remedy this situation (Center for Counter-proliferation Research 2004b: 28). This point is strongly underlined by William J. Perry (1999: 135–7), who emphasizes that the CPI was a means for dealing with asymmetrical warfare – wars in which US troops would be attacked by weapons of mass destruction. One important aim of the CPI was therefore to develop better protective equipment against the use of such weapons on the battlefield. Perry includes among the aims of the CPI the development of special weapons and tactics to destroy WMD before they could be launched, as well as the development of more effective defensive systems to intercept aircraft, cruise missiles and ballistic missiles.

In 1996 the CPI emphasis changed: top priority was now given to the detection and characterization of biological and chemical weapons (Schneider 1999: 39).
The emphasis on chemical warfare may be connected with the terrorist attack on the Japanese metro in 1995, in which chemicals were used – an attack that had undoubtedly made a strong impression on National Security Adviser Anthony Lake and Secretary of Defense William Cohen (Bee 2004: 36). The bombings in Oklahoma City and the World Trade Center also served to heighten awareness of the risk of a major terrorist attack.\(^{10}\)

The 1997 Quadrennial Defense Review underscored the importance of institutionalizing and internationalizing preparedness for attacks involving nuclear, biological and chemical weapons (Center for Counterproliferation Research 2004b: 12). By the turn of the century, some CPI activities were directed towards analysing the differences between biological and chemical warfare. Generally, however, the CPI appeared to be lacking in direction (ibid.: 14).

The CPI’s emphasis on biological and chemical warfare did not mean that nuclear pre-emption had disappeared from US strategic planning in the latter half of the 1990s. The characterization, identification and defeat of underground targets were also prioritized CPI tasks (Schneider 1999: 56). Pre-emption as a possible tool to prevent nuclear spread was explicitly stated in several policy documents, including 1997 The Nuclear Posture Review (Müller and Schaper 2004: 22–3; Schneider 1999: 53). A National Security Strategy for a New Century, issued in May 1997, stated:

To minimize the vulnerability of our forces abroad to weapons of mass destruction, we are placing a high priority on improving our ability to locate, identify, and disable arsenals of weapons of mass destruction, production and storage facilities for such weapons, and their delivery systems.

(Quoted from Schneider 1999: 53)

Interestingly, this statement refers to ‘our forces abroad’ – not the homeland. This was in line with the Clinton administration’s perception of ‘rogue states’ as being a threat to regional stability rather than to the US homeland.

When the Clinton administration did revert to what in practice was a counter-proliferation mission, it was not aimed at any of the named ‘rogue states’ but at a pharmaceutical plant in Sudan. The administration claimed that the plant was producing nerve gas and that this production was linked to the Islamist terrorist network al-Qaeda. When, in August 1998, the United States attacked the plant with cruise missiles, this was done as part of a broader operation against the terrorist network (Litwak 2003: 95).

**Grand strategy: combating weapons of mass destruction**

John Lewis Gaddis (2005) has characterized the security policy of George W. Bush’s administration as the most sweeping redesign of US grand strategy since the presidency of Franklin D. Roosevelt. Gaddis attributes the redesign to the shock of the ‘9/11’ al-Qaeda attacks on the World Trade Center and the Pentagon. As he sees it, George W. Bush set out to restore security in a world that had
suddenly become more dangerous (ibid.). Furthermore, in the run-up to the war on Iraq, Gaddis has interpreted the Bush administration’s National Security Strategy of September 2002 as a plan for transforming the entire Middle East into modern states. He perceives this project as a completion of Woodrow Wilson’s idealistic vision to ‘make the world safe for democracy’. This time, however, the vision and action are based on a ‘compellingly realistic reason’ – the dangers inherent in a combination of modern technology and radicalism (Gaddis 2003).

Undoubtedly the attacks of 9/11 provided impetus to the development of a new security policy, and the war in Iraq resulted from this strategy. Interpreting the war on Iraq and the new security strategy in general as signalling the start of a democratization process, it seems reasonable to regard this strategy as primarily a response to the events of 9/11. On the other hand, if the war in Iraq is seen as the first example of a preventive war against a ‘rogue state’ – and this is what the Bush administration stated it was – then it must be considered a counter-proliferation measure whose origins can then be traced back to the early 1990s. It would also follow with the latter interpretation that 9/11 must be seen as a catalyst rather than the event that actually set a whole new policy in motion (Litwak 2003; Mann 2004: 242, 286–8; Müller and Schaper 2004: 22–3, 42–3).11

One very important effect was that it confirmed the Republican threat perception of ‘rogue states’ not only as regional threats and threats to US forces abroad, but as threats to the US homeland. The 9/11 attacks heightened awareness of the danger that terrorists with weapons of mass destruction might represent, although that possibility had already been mentioned in Aspin’s speech that launched the CPI. Recall too that the preventive strike against the pharmaceutical plant in Khartoum had been part of a counter-terrorist operation. However, the ‘war on terrorism’ took on another dimension in the aftermath of 9/11, with a new emphasis on the link between rogue states and terrorist organizations.

A comparison between the Bush administration’s threat analysis before and after the events of 11 September reveals only a slight modification. Prior to the attacks, the threat analysis was manifestly focused on ‘rogue states’, although the possibility of terrorists acquiring WMD was also mentioned. President Bush referred repeatedly to the threat from ‘rogue states’ in his speeches, including his first speech to Congress in February 2001. In a talk at the National Defense University in May that same year he said:

> Unlike the Cold War, today’s most urgent threat stems not from thousands of ballistic missiles in Soviet hands, but from a small number of missiles in the hands of these states (some of the world’s least responsible states), states for whom terror and blackmail are a way of life.

(Bush 2001)

At that time, the need to counter ‘rogue states’ was used as an argument for the US unilateral withdrawal from the ABM Treaty and for basing deterrence on both offensive and defensive forces. Thus, in June 2001, Rumsfeld claimed that
the ABM had become irrelevant to the security challenges of the twenty-first century (Rumsfeld 2001).

The Bush administration’s new national strategy was set out in *The National Security Strategy of the United States of America* (NSS) of September 2002 (Bush 2002a) followed in December of the same year by the *National Strategy to Combat Weapons of Mass Destruction* (US Government 2002b) These documents contained basically the same threat analysis as before: ‘rogue states’ and terrorists equipped with nuclear, biological or chemical weapons were perceived as the gravest threats to the security of the United States, as well as endangering that of the United States’ allies and friends. The NSS defined ‘rogue states’ in much the same way as Aspin had ten years earlier, on a basis of a mixture of external and internal criteria. The NSS did not name the ‘rogue states’, but this was hardly necessary since Bush had branded Iran, Iraq and North Korea an ‘axis of evil’ in his 2002 State of the Union address (Bush 2002b).

One new element was mentioned in the threat analysis – ‘secondary proliferation’, that is, cooperation among proliferator states. The NSS was based on the assessment that curbing proliferation had become more difficult due to structural changes such as the emergence of secondary proliferation networks. What this meant was that supply no longer came solely from big industrialized countries, but also from sources in the developing world, thus creating a new acquisition pattern (Center for Counterproliferation Research 2004a: 13–14).

This assessment obviously reflected the revelation of the A.Q. Khan procurement network with its highly sophisticated structure, which had evidently supplied the nuclear programmes of Iran, Libya and North Korea, and possibly other programmes (Laufer 2005). Although it was not mentioned in the NSS, the Bush administration had already become aware of yet another threat – the risk that the nuclear weapons of a failed state might fall into the hands of terrorists. Developments in Pakistan at the end of 2001 had caused concern that General Musharraf’s government might collapse. In that event, fundamentalists might seize control of the Pakistani nuclear arsenal (Hersh 2004a: 290; Center for Counterproliferation Research 2004a: 48).

The Bush administration’s answer to these threats had three central components: (1) counter-proliferation, (2) strengthening of non-proliferation measures and (3) preparations to respond effectively to any use of weapons of mass destruction called ‘consequence management’ (US Government 2002b). The new policy marked a shift of emphasis from traditional non-proliferation to counter-proliferation, not just because counter-proliferation came first on the list, but also because it made preventive wars and strikes the ultimate solution for preventing proliferation. Bush called the new strategy a ‘doctrine of pre-emption’.

Establishing pre-emption as an official policy was a novelty. Previously, it had been a covert option which had been used occasionally (Daalder and Lindsay 2003: 126). Making it public policy met with strong criticism from many quarters. It was alleged that it was detrimental to America’s image in the world in general and especially to relations with its allies. Questions were also
raised regarding the wisdom of setting a negative precedent that others might follow (ibid.: 125–8). Some argued that the pre-emptive doctrine undermined a fundamental norm of global governance by giving licence to other countries to follow suit (Litwak 2003: 87).

The conflation of the agendas of terrorism and proliferation was seen as extremely unfortunate: there was no international consensus regarding strikes to prevent proliferation, whereas defensive strikes against terrorists had considerably more international backing. The absence of support regarding preventive strikes against proliferating states was seen as reflecting both disagreement with the United States’ threat analysis (ibid.) and the essential illegality of such action. Some analysts were particularly concerned about the shift of emphasis from non-proliferation to counter-proliferation, and worried that counter-proliferation was not as much a complement as an alternative to traditional non-proliferation. It was even suggested that the NSS was undermining the global approach of the non-proliferation regime – since it was not the worldwide spread of weapons of mass destruction that was deemed a threat to security, but rather their spread to specific countries (Nolan et al. 2003: 233–4).

**Counter-proliferation**

At the heart of counter-proliferation lies the willingness to use military action in order to prevent certain countries from acquiring nuclear, biological or chemical weapons. George W. Bush himself called the strategy contained in NSS a doctrine of pre-emption, in accordance with the way ‘pre-emption’ had been used for a decade. Yet in reality what the NSS described was prevention, or the use of preventive wars. The distinction between pre-emptive and preventive wars is one of timing and legality.

According to international law, a pre-emptive war is a legitimate war of self-defence when an aggression is imminent. In the case of a preventive war, there is no imminent threat of aggression, and the war is launched to block a threat from escalating. Preventive war is not part of international law (Daalder and Lindsay 2003: 127). The NSS does not conceal this fact, but argues that international law must be changed to adjust to the threat created by modern technology.

The primary objective of what is called a ‘pro-active’ counter-proliferation is the elimination of weapons of mass destruction. The Center for Counterproliferation at the US National Defense University (since September 2004 ‘the Center for the Study of Weapons of Mass Destruction’) distinguishes between three phases in an elimination process. The aim of the first phase is to locate and gain physical control of WMD sites, documentation, personnel and materials. The second phase involves the dismantling and disposing of weapons, equipment and infrastructure. The third phase seeks to prevent the reconstitution of the threat through monitoring (Center for Counterproliferation Research 2004a: 37).

These operations can be fraught with hurdles and challenges. For instance, constraints in the form of underground facilities complicate planning and
execution of counter-proliferation strike operations. The missile strike against the pharmaceutical plant in Sudan in 1998 was restricted because of fear that chemicals might be released and cause harm to civilians. It was therefore relatively ineffective. The war on Iraq is interpreted as a typical example of what pre-emption might entail, and the Center has warned that regime change does not necessarily equal the elimination of weapons of mass destruction (ibid.: 38). This warning is probably a reference to the looting of facilities that took place in Iraq in 2003.

From the early 1990s to the present, reliable intelligence has been seen as precondition for successful preventive military actions. The Center for Counter-proliferation Research (2004a: 14) claims that past experience shows that US intelligence has been inadequate. Before the Gulf War in 1991, US intelligence had underestimated the scope of the Iraqi weapons of mass destruction programmes. Twelve years later, the first war declared to be pre-emptive was also based on an erroneous estimate of Iraq’s activities in this field. Furthermore, US intelligence had failed to detect India’s preparations for its 1998 nuclear test series (ibid.).

It is also possible that at the time of the Bush administration’s fear that General Musharraf’s government might collapse the administration did not know the whereabouts of the Pakistani nuclear arsenal (Hersh 2004a: 292–4). The fact that the Khan network was able to operate for more than a decade makes the picture even bleaker.

**Interdiction**

The US *National Strategy to Combat Weapons of Mass Destruction* of December 2002 listed interdiction as first among key components of a pro-active counter-proliferation effort. On 23 May 2003, George W. Bush announced the Proliferation Security Initiative (PSI), the purpose of which was to ‘enhance and expand . . . efforts to prevent the flow of weapons of mass destruction; their delivery systems, and related materials on the ground, in the air, and at sea, to and from countries of proliferation concern’ (quoted from US Department of State Fact Sheet 2004).

It has been claimed that the PSI was primarily a means to enhance policy leverage over North Korea by targeting North Korean shipments of goods related to WMD programmes (Center for Counterproliferation Research 2004a: 46). The PSI was an indication then that it had become difficult to use coercive diplomacy against North Korea once its nuclear programme had reached a stage where the possession of nuclear weapons could not be excluded (ibid.). At its onset, the PSI clearly had a broader aim. In May 2005, Secretary of State Condoleezza Rice claimed that eleven weapons-related transfers had been indicted during the previous nine months. These included supplies destined both for North Korea and for Iran (‘US hails . . .’ 2005).

The PSI was a multilateral initiative, with eleven countries initially participating. Other countries were rather blatantly encouraged to endorse the initiative
through diplomatic channels and public statements (US State Department Fact Sheet 2004). The PSI was also evidently used as a political tool to rally support for the US counter-proliferation strategy. Eventually, some seventy countries reportedly joined. The aim of the PSI was to coordinate efforts to interdict transfer of weapons of mass destruction and equipment and delivery systems connected to such weapons. Interdiction could take the form of boarding ships or of denying transit rights to aircrafts.

The criterion for interdicting transfers was that they were transfers ‘to and from states and non-state actors of proliferation concern’ (quoted from Proliferation Security Initiative 2003). The designation meant that the PSI was not concerned only with states that acted in contravention of the NPT, the Chemical Weapons Convention or the Biological Weapons Convention, but also with non-member-states and non-state actors. This gave rise to some legal problems. The NPT is prescient in that it prohibits transfer of weapons to ‘any recipient whatsoever’.12 Yet this is not beneficial if the supplier is one of ‘the nuclear three’ that have not joined the treaty, or if it is a state that has withdrawn from the treaty. In addition, there was the issue of non-state suppliers.

The solution to this predicament came in the form of UN Security Council Resolution 1540 (UNSCR 1540), unanimously adopted on 28 April 2004. In recognizing the state as the sole legitimate holder of materials related to weapons of mass destruction, UNSCR 1540 provides an international legal basis for interdiction. Paragraph 10 of the resolution explicitly calls upon all states ‘to take cooperative action to stop, impede, intercept and otherwise prevent the illicit trafficking of these weapons, their means of delivery and related materials’. Not only did the resolution outlaw non-state actors as holders of WMD, delivery systems and related materials. It also meant that India, Israel and Pakistan could be held responsible if such items were diverted from their nuclear programmes to terrorists or other parties (Perkovich 2004: 24). Given that coercive diplomacy is regarded as a prerequisite for preventive actions, it is furthermore likely that the resolution was conceived partly in order to provide a legal basis for sanctions.

The nuclear disarmament obligation

The shift of emphasis in US policy from non-proliferation to counter-proliferation has been called a ‘major transformation’ (Nolan et al. 2003: 3–4), even a ‘revolution’ (Spear 2003), taking non-proliferation efforts to a new level. Some counter-proliferation measures like interdiction and especially UNSCR 1450 have broad support. Perhaps this is because they are multilateral measures and because they are necessarily regarded as an amalgam of traditional non-proliferation measures as well as more recent counter-proliferation ones. Yet the most extreme elements of counter-proliferation, which are in fact the core elements – namely, preventive strikes or prevention in the form of regime change – are also extremely contentious.

Not only are the means contested, even deplored, the very threat analysis
upon which the counter-proliferation policy is based has been questioned. Therefore there is deep concern about the political consequences of this latest change of mode. What will the consequences be for the nuclear taboo, the development of world governance, the universalist aim of the non-proliferation regime and the non-proliferation regime itself? Does the new mode amount to a policy of selective proliferation? Is the obligation of nuclear disarmament virtually forgotten?

If the US policy in regard to the 2005 NPT Review Conference is taken as a litmus test of the Bush administration’s commitment to the non-proliferation regime as a whole, it did not pass. The Review Conference was a fiasco; the Bush administration came unprepared and exercised no leadership during the conference (Cirincione 2005). It was the most strife-ridden NPT Review Conference in history. A key contentious issue was that while the implementation of US counter-proliferation policy in Iraq had taken non-proliferation efforts to another level, there was little sign of willingness on the part of the United States to honour its own obligation to nuclear disarmament.

THE same nuclear law for Thor and for Loki?

As the 2005 NPT Review Conference unfolded, it became evident that the various states had come to the conference with extremely different aspirations. The entrenched positions that resulted created an insurmountable division, and the conference ended without a final document. With regard to the NPT, we can distinguish between two major developments during the post-Cold War period. First, the Review Conferences in 1995 and 2000 had produced politically binding documents containing principles, objectives and concrete steps for achieving disarmament. However, the disarmament measures contained in the 2000 Final Document had been largely ignored, and the Conference on Disarmament had been deadlocked since the mid-1990s.

Second, grave challenges to the treaty had arisen in the form of clandestine nuclear programmes, NPT members’ misuse of their rights to nuclear energy production, illicit nuclear trade networks and the danger of terrorists acquiring nuclear weapons or at least dirty bombs. The US response to these challenges had been to take non-proliferation measures to a new level, especially by introducing and practising preventive warfare. The 2005 Review Conference represented a confluence of these two lines of development. Even before the conference started, it was given that non-compliance with the NPT would be a hot topic.

The US focus at the conference was on Iran’s and North Korea’s failure to comply with their safeguards obligations, and in the case of the latter with its non-proliferation obligation as well. Having first withdrawn from the NPT in 2003, the North Koreans had later announced that they possessed nuclear weapons. Iran seemed to be moving in the same direction, and the United States had come to perceive of the Iranian programme as representing latent proliferation. The United States also highlighted the challenges emerging from the illicit nuclear trafficking by non-state actors and the danger that terrorist organizations
might acquire nuclear weapons. Washington proposed new measures designed to meet these challenges: increased nuclear material security, making the Additional Protocol the verification standard for the NPT, establishing a special safeguards committee of the IAEA board, a strengthened export control regime, and tighter control on enrichment and reprocessing technologies (Rademaker 2005a). The US concern over the ‘loopholes’ in the non-proliferation regime was undoubtedly shared by many states, but not to the same degree.14

Many non-nuclear-weapon states were equally concerned about the non-compliance of the nuclear-weapons states to Article VI. The politically binding Final Document from the 2000 NPT Review Conference contained ‘practical steps’ towards the implementation of disarmament measures, including the ratification of the CTBT, negotiation on an FMCT and reductions in arsenals of sub-strategic nuclear weapons. The US refusal to include specific references to these commitments was a major factor that contributed to the deadlocking of the conference. Many states deemed the reductions of the post-Cold War period in US and Russian arsenals as insufficient. They wanted irreversible measures that showed genuine commitment to the goal of eliminating nuclear weapons. They maintained that the refusal of the United States to ratify the CTBT, its unilateral withdrawal from the ABM Treaty and the US exploration of nuclear weapons were contraventions of the treaty.

Egypt’s uncompromising stance during the 2005 Review Conference was a principled one (Crail and McMonigle 2005), aimed at preserving what the country’s ambassador Maged Abdelaziz called ‘the balance of commitments’ of the non-nuclear and the nuclear-weapons states (quoted from Boese 2005b). Egypt was adamant that there should be a balanced policy with regard to the Middle East, and would not accept more stringent rules attaching to the nuclear cycle as long as Israel had not joined the NPT and was not bound by IAEA safeguards (Roche 2005: 6). After the conference, the Egyptian ambassador blamed the failure of the conference on the nuclear-weapon states, insisting that they had shirked their disarmament obligations (Boese 2005b).

Egypt was not the only country to make this point. Speaking for the NAM countries at the conference, Malaysia had stressed that the indefinite extension of the NPT did not imply the indefinite possession of nuclear weapons (Johnson 2005a). Sweden insisted that any Final Document must contain a reference to the ratification of the CTBT, even if the United States would not endorse such a policy (Crail and McMonigle 2005). All the same, the NAM countries were not able to stick to the same policy line at the conference, with Egypt behaving almost aggressively and Sweden and Ireland more willing to find middle ground on disarmament (Roche 2005: 2, 43). However, New Zealand’s Minister of Disarmament and Arms Control, Marian Hobbs, spoke on behalf of all the NAM countries when she argued that disarmament could not always be postponed because of tensions in the world. She said: ‘It cannot be the case that disarmament must await the resolution of tensions, for if such a proposition was always followed then a peaceful settlement more often than not might never come about’ (Hobbs 2005).
The United States, however, showed little willingness to compromise. The immediate reactions among analysts following the 2005 NPT Review Conference were that US policy prior to the conference, and intransigence during the conference, had negatively impacted its outcome (Cirincione 2005; Boese 2005b; Moltz 2005; Kimball 2005a).

Conclusion

The post-Cold War world has witnessed several serious challenges to the nuclear non-proliferation regime – clandestine nuclear programmes in non-nuclear-weapon states party to the NPT, withdrawal from the treaty, illicit nuclear trade networks, insufficient protection of nuclear materials in some countries, the danger of terrorist atrocities. These developments have revealed the urgent need to strengthen and improve the regime.

However, the way in which these challenges have been met has raised its own particular problems. The world’s undisputed hegemon, the United States, has reacted by taking the *modus operandi* of non-proliferation to new levels by declaring coercive diplomacy, interdiction, military strikes and preventive war to be core elements of its national strategy. Arguably, the United States has in fact viewed the above-mentioned developments more as threats to national security and the security of its ‘friends and allies’ than as challenges to the non-proliferation regime as such, and has reacted accordingly. US policy seems to have turned myopic, concentrating on national interest and relinquishing the universalist principle of the regime.

While the current Bush administration is willing to go to war in order to prevent some countries from acquiring nuclear weapons, nuclear weapons in some other countries are tacitly accepted. Furthermore, it has backtracked with regard to the disarmament commitments of nuclear-weapon states, even setting aside the ABM Treaty in order to develop more sophisticated weapons. These developments have exacerbated the imbalance of the non-proliferation regime. The imbalance of the commitments entailed in the NPT has long been an impediment to strengthening the regime, in particular its means of control.

The regime cannot be mended without political consensus among NPT states. A US policy that combines preventive endeavours with unwillingness to accept certain fundamental disarmament measures is clearly not conducive to building political consensus. As George Perkovich has argued (Perkovich 2003), the United States is simply not setting a good example as the hegemonic nuclear-weapon state. On the contrary, Washington’s new policy lines, both the new *modus operandi* of non-proliferation and the relinquishment of its own disarmament commitments, are damaging US legitimacy, as the 2005 NPT Review Conference bore witness to.

The upshot appears to be that the United States is undermining its own goals of, for example, strengthening IAEA control of the nuclear cycle. It would seem that it is not just regional developments in Asia and the Middle East that are threatening the sustainability of the non-proliferation regime, but also the way
the United States is handling these new challenges. Here we should bear in mind that the inequality of rights and duties of the NPT is not just a matter of principle: it is also a matter of distribution of power. If the NPT is perceived as allowing the nuclear-weapon states to amass military might to be used as they wish, it should not come as a surprise if some non-nuclear-weapon states should start to question the wisdom of the non-proliferation regime as a whole.

Notes

I would like to thank Kimo Quaintance for his generosity in sharing his bibliography on counter-proliferation policy with me, William Walker for his wise and encouraging comments, and participants at the conference on ‘Halting Nuclear Proliferation in the Twenty-first Century’ held in Oslo in October 2005 for their comments and advice.

1 For a recent analysis of the obligation to disarm contained in Article VI, see e.g. Goldblat and Schaper 2005.
2 See e.g. Forland 1997: 293–302 and Bunn 1994 for more information on this.
4 William Walker has characterized India’s attitude to the regime as one of hatred, reflecting an intense grievance over what India perceives as the inferior status of the non-nuclear-weapon states (Walker 1998: 511).
5 Interestingly, Jeffrey A. Larsen 2005 calls this new policy ‘neo-arms control’, and argues that it is in line with Schelling’s and Halperin’s original aims of arms control, although the means have changed radically.
6 The Atoms for Peace policy followed a dramatic shift in military balance between the United States and the Soviet Union in the years from 1950 to 1953, caused by a huge build-up of military power in the United States. For an excellent analysis of US strategy in this period, including US thinking about preventive war, see Trachtenberg 1991.
7 The right of all states to the peaceful uses of nuclear energy is confirmed several times in the NPT. On suggestions from Latin American and African countries, a clause was included specifying that due consideration should be given to the needs of the developing areas in the peaceful uses of nuclear energy (see Forland 1997: 302–7).
8 All the important negotiations on safeguards were marked by compromises. At every stage, measures were introduced that were considered to have practical relevance at the time. See Forland 1997.
9 See for instance Drennan 2004: 166.
10 Consult Carter 1996 for further information.
11 This is by no means an original interpretation. Several analysts have remarked on the continuity between the Clinton and Bush administrations with regard to strategic policy.
12 It was the Soviet Union that insisted on this formula during the negotiations of the treaty in order to ensure that the German Federal Republic would not gain access to nuclear weapons through NATO; see Forland 1997: 266–7.
13 The US threat perception is not universally shared. For an overview of national differences regarding threat perceptions, see Parrish and Potter 2005.
14 For an overview of attitudes in a selection of states on how to strengthen non-proliferation measures, see Parrish and Potter 2005.
15 For a defence of this position, see Larsen 2005.
The Nuclear Non-proliferation Treaty (NPT) was negotiated in a world marked by one fundamental, discriminatory reality. A small group of states – five in a system of nearly 200 – possessed nuclear weapons. All other states not only did not possess them but were being asked to join a legally binding agreement that would require them to forswear nuclear weapons for ever. The NPT, signed in 1968, acknowledged this discriminatory reality by designating the nuclear five as the only legally recognized nuclear-weapon states. Thus, though the NPT did not create this situation, it did accept and codify the division of the world into nuclear haves and nuclear have-nots.

It is a remarkable fact that in the NPT context the many were prepared to tolerate the distinctive privileges of the few. Moreover, this was not a minor concession by the non-nuclear-weapon states – some of whom were capable themselves of acquiring nuclear weapons at the time or in the future. Nuclear weapons were the ultimate arbiters of international security. They conferred great status on those who possessed them. The nuclear-weapon states were outspoken about the enormous and unique security benefits provided by nuclear weapons. The nuclear superpowers routinely declared nuclear weapons to be essential for their own security. Under these circumstances, it is truly extraordinary that nearly all states in the system have been willing to give up their own right to possess nuclear weapons while accepting the presence of five nuclear-armed states among them.

What explains this surprising outcome? The answer is that the NPT emerged from a bargaining process in which the non-weapon states gained benefits and concessions that made it worthwhile to tolerate the two-tiered nuclear order codified by the treaty. In Article IV of the treaty, for example, the non-weapon states were guaranteed unfettered access to civil nuclear technology. The nuclear-weapon states also offered negative security assurances, promising that they would not employ their nuclear weapons, either militarily or diplomatically, against non-weapon states.

Among the inducements meant to make the treaty acceptable to non-nuclear-weapon states was Article VI, understood to represent a long-term commitment to nuclear disarmament. This implied, of course, that the unequal status quo reflected in the NPT would not be permanent. Eventually the nuclear-weapon
states would eliminate their nuclear arms. Even if this were to be far into the future, the obligation to disarm meant that non-weapon state signatories to the treaty were not condemned to second-class status for ever.2

Thus the issues of nuclear non-proliferation and nuclear disarmament have been intertwined from the earliest days of the NPT regime. This linkage, essential to the formation of the regime, has proven troublesome throughout the succeeding years, raising both legal and political questions that have pitted the have and the have-nots against one another. Confrontation over Article VI has been a central strand in the history of the NPT system, and generally an unhappy chapter in that history. There has been persistent and bitter disagreement – recurrently to the point of paralysis – about what disarmament obligation exists and how well it has been fulfilled. The analysis that follows analyses the source of this disagreement and assesses its implications for the NPT regime.

The disarmament obligation

The legal obligation and political expectation that there should be meaningful progress toward nuclear disarmament derives from Article VI of the NPT. It is this provision that creates the explicit and formal link between the NPT and nuclear disarmament efforts by nuclear-weapon states. However, Article VI is not as clear or straightforward as implied in the common suggestion that it requires or demands nuclear disarmament by the nuclear-weapon states. In fact, while Article VI is often invoked, it may be that it is rarely read, because the text of the treaty is far more vague and conditional than the common understanding of it.

Article VI consists of a single equivocal sentence:

Each of the parties to the treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective control.

As written, the text of the treaty requires not nuclear disarmament but the pursuit of negotiations, not nuclear disarmament but ‘effective measures relating to . . . nuclear disarmament’. It does not require success or even progress in such negotiations, but merely ‘good faith’ effort to achieve effective measures. While it calls for an attempt to end the nuclear arms race at an ‘early’ but unspecified date, there is no deadline or timeline associated with the pursuit of nuclear disarmament.

Indeed, the treaty provides no criteria by which the fulfilment of Article VI can be judged. Nor does Article VI specify any consequences should it be determined that parties to the treaty are not living up to its provisions. Further, though Article VI is often described as if its comma were a full stop and the final clause did not exist – suggesting that it is a concern only for the nuclear-weapon states. In fact it is explicit that ‘Each of the Parties’ – including the
non-nuclear-weapon states – has an equal obligation to pursue ‘general and complete disarmament’.

On close scrutiny, it is hard to avoid the conclusion that Article VI was written in an intentionally evasive and ambiguous way. If the aim were to firmly commit the nuclear-weapon states to nuclear disarmament, far more clear-cut and binding language was easily available. A deadline could have been introduced. Article VI could have established interim mileposts – half of their nuclear weapons removed within five or ten years, for example. If there were a concern to avoid delay in the commencement of the disarmament process, the treaty could have specified steps to be taken immediately or in the near term. To induce compliance and increase the confidence of the non-nuclear-weapon states that Article VI would be effective, the future of the treaty could have been made conditional on the full satisfaction of the disarmament obligations of the nuclear-weapon states in some specified time frame. There were, in short, several easy and obvious ways that Article VI could have been made less ambiguous and more demanding.

Article VI does none of these things. It was deferential to the intractable realities of the era in which it was written. It was negotiated at a time when the two superpowers possessed prodigious and still growing nuclear arsenals, when each was visibly, wholly and unalterably committed to ambitious nuclear doctrines, when the nuclear arms race between the United States and the Soviet Union was one of the hallmarks of the rivalry between those two formidable powers. It was drafted at a time when there existed no negotiated limits on the force postures of the nuclear powers, nor had any serious strategic nuclear arms control negotiations commenced. Under these circumstances, nuclear disarmament must have seemed a remote prospect indeed, and it would have been either folly or futility to insist on language that straightforwardly compelled the elimination of the nuclear inventories of the NWS. Article VI probably went about as far as the superpowers would allow. A vague and rather rhetorical commitment to eventual nuclear disarmament was tolerable. Any stricter requirement to work toward or to attain nuclear disarmament would immediately and inevitably have collided with existing and future defence plans of the United States and the Soviet Union.

Nevertheless, the elusive character of Article VI has given rise to several decades of contentious disputes over the meaning of the provision and to several decades of friction over whether the nuclear-weapon states have fulfilled their obligations under Article VI. Though dissatisfaction with the performance of the nuclear-weapon states in meeting their disarmament obligations under the NPT may have escalated since the end of the Cold War, this issue has been prominent and controversial throughout the history of the NPT system.

It generated considerable heat even at the First NPT Review Conference in May of 1975. By the time of the Second NPT Review Conference in August 1980, disagreement over Article VI fulfilment was so intense as to paralyse the proceedings. As one account explains, ‘the participants in the Second Review Conference were unable to adopt a final declaration, primarily in view of funda-
ment differences over the implementation of Article VI’ (Federation of American Scientists n.d.; UN Department for Disarmament Affairs 2000: 15). Thus the pattern was established early on in the history of the NPT regime that disputes over Article VI would mark NPT Review Conferences and recurrently prevent progress at those meetings. Half of the Review Conferences, held every fifth year, have failed to produce a Final Document; confrontation over Article VI is one important reason why.

From the beginning, therefore, a significant and – over the years – a swelling chorus of voices has accused the nuclear-weapon states – especially the United States and Russia – of failing to live up to their disarmament obligations. Many parties to the treaty and many analysts around the world have always taken Article VI seriously, have always viewed it as an important feature of the NPT and have always construed it to represent a clear obligation by the NWS to nuclear disarmament. Many have also regarded this as a commitment that requires something more than a rhetorical commitment to nuclear disarmament in the vanishingly distant future.3

Especially during the Cold War, but even today, the nuclear-weapon states (and notably the United States and Russia) look upon Article VI from a very different vantage point. At no time during the life of the NPT, from 1968 onwards, have nuclear weapons been regarded as anything other than central and integral to the defence postures of the nuclear-weapon states (Miller 2003). During much of this period, nuclear modernization has continued apace, and prodigious accumulations of nuclear weapons – altogether numbering many tens of thousand of weapons – have remained in the arsenals of the nuclear-weapons states. At no time during the life of the NPT has nuclear disarmament been compatible with the military doctrines of the nuclear-armed states. Though leaders in NWS (including US presidents) have repeatedly expressed verbal support for the notion of nuclear disarmament, at no time has it been an operational policy objective of any of these states. Whatever Article VI may say or mean, it has always coexisted with a reality marked by large nuclear arsenals and unshakable belief in the unique value and importance of nuclear weapons.

These realities have not caused the nuclear-weapon states to spurn or repudiate Article VI, however. After more than thirty years of concern, criticism and complaint from non-nuclear-weapon states about the fulfilment of Article VI, both Washington and Moscow certainly understand that it would be politically incendiary to question or reject Article VI. Thus even the Bush administration’s representative at the 2005 NPT Review Conference opened her speech by stating unambiguously that ‘the United States recognizes its Article VI commitments’ (United States Mission to the United Nations 2005: 1).

Nevertheless, the NWS have clearly perceived Article VI to be ancillary and subordinate to the principle purposes of the NPT – that is, preventing the spread of nuclear weapons to other states. Further, they have fully exploited the imprecise and evasive language of Article VI, arguing at each Review Conference that they were complying with NPT requirements no matter what the state of their nuclear postures, no matter what the state of the nuclear balance and no matter
what the fortunes or misfortunes of arms control might be. It has always been possible to assemble a document of unilateral or negotiated steps taken, cuts implemented, forces retired and agreements reached. These moves, it was always insisted at any given moment in time, constituted fulfilment of NPT obligations under Article VI. They were represented as good-faith efforts to achieve ‘effective measures’.

In short, at every necessary occasion the nuclear-weapon states – especially Russia and the United States – offer what they regard as convincing (or at least adequate) evidence that Article VI is being fulfilled. Typically, these justifications were and are unsatisfying to many among the non-nuclear-weapon states. While evidence of restraint – arms control agreements achieved, reductions made and so on – is generally welcomed, critics of NWS performance focus more on the so far unwavering plans to retain nuclear weapons for the foreseeable future, the continuing centrality of nuclear weapons in the defence strategies of NWS, the persistent embrace of first-use doctrines and the retention of thousands of nuclear weapons in the arsenals of Washington and Moscow.

Even during the Cold War, the behaviour of the big two was seen as objectionable, but with the end of the Cold War the justification for retaining major elements of the Cold War nuclear postures simply disappeared. The end of superpower rivalry and the collapse of the rationale for the nuclear arms competition that accompanied that rivalry raised expectations that there would be substantial visible progress toward nuclear disarmament. In this context, there were higher hopes that nuclear disarmament would enter the realm of practical politics and less tolerance for the resistance of the NWS. But the nuclear-weapon states showed no inclination to abandon their fundamental long-term intention to retain nuclear weapons.

The three disarmament elaborations

For those frustrated and dissatisfied by the performance of the nuclear-weapon states in fulfilling Article VI, an obvious remedy was to find ways of strengthening the disarmament obligation by making it more explicit, more binding and more directly linked to tangible steps on the road to nuclear disarmament. The nuclear-weapon states, of course, have benefited from the flexibility offered by the original Article VI language and hence have little incentive to acquiesce to refinements of the disarmament commitment that will more seriously bind them to a course of action that has yet to seem wholly acceptable to them. Nevertheless, over the past decade there have been three significant instances in which Article VI has been supplemented in ways that sought to make the Article VI commitment more explicit, more binding and more tangible.

One opportunity arose in connection with the 1995 NPT Review and Extension Conference. This was considerably more than a regular review conference as a result of Article X(2) of the NPT, which placed the future of the treaty in the hands of this gathering:
Twenty-five years after the entry into force of the Treaty, a conference shall be convened to decide whether the Treaty shall continue in force indefinitely, or shall be extended for an additional fixed period or periods. This decision shall be taken by a majority of the parties.

In view of the contentious history of the NPT and the evident disaffection of some members of the regime, it was by no means taken for granted in the period before the 1995 conference that there would be plain sailing to the renewal of the treaty. On the contrary, there was wide cognizance that fundamental issues were in play and that the fate of the NPT hung in the balance. ‘Is the NPT likely to be faced with a fundamental challenge to its existence?’ asked one expert in 1994, assessing possible outcomes of the 1995 conference. ‘Will the treaty be allowed to lapse? Will states withdraw? Will the NPT be succeeded by an alternative treaty or regime? Will it be undermined, perhaps fatally, by attempts to amend its basic provisions, either out of an intention to improve it or to ensure its destruction?’ (Pilat 1995: 47).

Clearly, it was possible to envision a whole range of negative outcomes – and the result of the 1995 Review and Extension Conference would be determined not by the handful of nuclear-weapon states, nor even by those states and their formal allies. Rather, the choice about the NPT’s future – indeed, whether it had a future at all – would be decided by the large number of non-nuclear-weapon states which are party to the treaty.

Under these circumstances, the non-nuclear-weapons state possessed considerable leverage and the nuclear-weapon states were more predisposed to make concessions that could ensure the extension of the treaty for a long period of time, if not indefinitely. The majority of states appeared to favour the retention of the treaty in some form. But the possibility of a diplomatic disaster at the 1995 conference could not be excluded completely. Moreover, even if the treaty were preserved, the future character and politics of the NPT regime would be heavily shaped by the option chosen by the conference.

A future in the context of unconditional indefinite extension of the NPT, for example, would be very different from a conditional short-term prolongation of the treaty with a further conference to re-examine the future of the treaty at some point not too far down the road. Those parties that favoured the unconditional indefinite extension of the NPT therefore had incentives to make concessions that would win over doubters, sceptics and hard bargainers. The United States, to cite one critical example, was particularly keen to obtain the indefinite extension of the NPT.

In contrast, coalitions of non-nuclear-weapon states, led by countries such as Mexico and Indonesia, believed either that indefinite extension should be made conditional on the achievement of specific disarmament steps or that the conference should extend the treaty only for a fixed period in order to preserve the leverage that might promote nuclear disarmament. These consequential differences in preference produced a dynamic that, among other things, allowed the non-nuclear-weapon states to demand and receive a renewal of the disarmament promise along with commitment to some specific arms control measures.
The 1995 conference was therefore able to produce on the basis of consensus a document on ‘Principles and Objectives for Nuclear Proliferation and Disarmament’. In its preamble, it states explicitly as a goal ‘the complete elimination of nuclear weapons’. In paragraph 3 the nuclear-weapon states ‘reaffirm’ their commitment to pursue nuclear disarmament (albeit in language that resembles Article VI). In paragraph 4 the document lays out a plan of action that would be ‘important’ in the ‘effective implementation’ of Article VI.

Accepted by the nuclear-weapons states as well as all other participants in the NPT conference, this action plan included rapid completion (by 1996) of the Comprehensive Test Ban Treaty, ‘the immediate commencement and early conclusion’ of talks on the banning of fissile material production; and the ‘determined pursuit’ of reductions in the number of nuclear weapons.

A second strengthening of the disarmament commitment derived from a request made by a UN agency for an Advisory Opinion from the International Court of Justice (ICJ) on a series of questions relating to the legality of nuclear weapons. During the ICJ’s protracted deliberations, the United States weighed in heavily with documents that sought to persuade the court of the legitimacy and legality of nuclear weapons. In the end, however, the Court issued an advisory opinion on 8 July 1996, in which it held that the threat or use of nuclear weapons would ‘generally be contrary to the rules of international law....’

Though the Court offered an inconclusive finding on the question of whether nuclear use would be lawful ‘in extreme circumstances of self defence, in which the very survival of a state would be at stake’, many around the world took the ICJ opinion to mean that nuclear weapons are illegal – thereby providing another reason why the nuclear-weapon states should actively move toward nuclear disarmament. Failing to fulfil the Article VI disarmament obligation leaves the nuclear-weapon states in possession of these weapons now believed to be unlawful by many critics.

Further, the ICJ offered an opinion that represented a clarification and elaboration of the content of Article VI. The fourteen-judge panel reached a unanimous judgment on the meaning of Article VI: ‘There exists an obligation to pursue in good faith and bring to a conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control’. This single sentence, examined closely, represents a significant augmentation of the single sentence that comprises Article VI. The ICJ specifies an obligation not simply to ‘pursue’ negotiations but to bring those negotiations ‘to a conclusion’. In the ICJ interpretation the aim is not simply the rather limited requirement to seek ‘effective measures relating to nuclear disarmament’ but ‘negotiations leading to nuclear disarmament’. The Article VI version could be and has been construed to be compatible with any limited steps in the direction of arms control and disarmament, whereas the ICJ formulation insists that negotiations must result in ‘nuclear disarmament in all its aspects’, implying not limited steps but the comprehensive achievement of nuclear disarmament.

Whereas the nuclear-weapon states have hewed closely to the precise text of Article VI to defend their fulfilment of its provisions, the ICJ in its advisory
opinion seems to have drawn out and explicated the core intent of Article VI as it is viewed by many parties to the NPT.

Those discontented with the Article VI performance by the nuclear-weapon states and vexed by more than a quarter of a century of fruitless haggling over Article VI welcomed this clarification by the International Court of Justice and felt vindicated by the interpretation that the ICJ offered. The ICJ opinion also provided additional ammunition for those seeking to pressure the nuclear-weapon states into genuine movement toward nuclear disarmament. It provided the basis, for example, for subsequent moves at the United Nations to call for immediate multilateral negotiations aimed at a convention that would prohibit nuclear weapons and all activities (development, testing, deployment, etc.) associated with nuclear weapons.

In 1996, 139 states voted at the United Nations to endorse the ICJ opinion and 115 voted for a resolution calling for talks to begin in 1997 on a convention prohibiting nuclear weapons. For their part, the nuclear-weapon states clung to the fact that ICJ Advisory Opinions do not have legal force and are not legally binding. The nuclear-weapon states did not agree to and do not accept the ICJ interpretation, they generally opposed the resolutions put forward at the UN, and of course they did not agree to begin negotiations on the elimination of nuclear weapons.

Nevertheless, by the mid-1990s, the world had witnessed the reaffirmation of the disarmament commitment by the nuclear-weapon states, the creation of an action plan that for the first time identified practical steps to be taken down the road to disarmament and a legal clarification that substantially reinforced the disarmament obligation created by Article VI. These developments did not give rise, however, to a phase of active progress in arms control, substantial changes in the behaviour of the nuclear-weapon states, or harmonious relations within the NPT regime between the haves and the have-nots. On the contrary, arms control efforts stagnated, multilateral diplomacy sputtered, commitment to the ABM Treaty appeared to be eroding and several acrimonious NPT Preparatory Committee meetings were held in the late 1990s in anticipation of the 2000 NPT Review Conference.

The third significant enhancement of the NPT-related disarmament commitment emerged out of this unpropitious context. At the 2000 NPT Review Conference, the parties achieved consensus on a Final Document that included a substantial set of measures that would constitute more faithful implementation of Article VI (NPT Review Conference 2000a). This result surprised many expert observers, and probably even participants at the conference who experienced its heated and sometimes confrontational workings.

Nevertheless, after considerable diplomatic effort and considerable compromise on both sides, an initiative spearheaded by the New Agenda Coalition (a grouping of middle powers committed to nuclear disarmament) formed the basis of an agreed roster of steps that would represent, as the Final Document put it, 'systematic and progressive efforts to implement Article VI of the Treaty on the Non-proliferation of Nuclear Weapons and paragraphs 3 and 4(c) of the 1995
Decision on “Principles and Objectives for Nuclear Non-proliferation and Disarmament”9. In other words, the 2000 NPT Review Conference spelled out in a more specific and detailed fashion than ever before what should be done to begin fulfilling Article VI of the NPT and the 1995 reaffirmation of Article VI. For the first time, there existed a set of agreed criteria for assessing the performance of the nuclear-weapon states in relation to Article VI. In the 2000 Final Document, paragraph 15 of the discussion of Article VI identifies thirteen ‘practical steps’ to which all parties to the treaty, including the five legally acknowledged nuclear-weapon states, have agreed – a collection commonly referred to as ‘the thirteen steps’.

They ranged from the broad and expansive to the narrow and precise. Item 15(6) is perhaps the most fundamental. It calls for ‘An unequivocal undertaking by the nuclear-weapon states to accomplish the total elimination of their nuclear arsenals leading to nuclear disarmament to which all States parties are committed under Article VI’. This is, of course, a restatement of the Article VI disarmament commitment in much less ambiguous, far more explicit, language.

Item 15(4) calls for the immediate establishment within the UN Conference on Disarmament of a body mandated to work on nuclear disarmament; this would provide a venue within which disarmament negotiations would be advanced. Item 15(5) establishes the principle of irreversibility in nuclear disarmament and arms control efforts; any steps taken should be permanent. Item 15(12) lays down a requirement for ‘regular reporting’ about implementation of NPT-related disarmament obligations, ‘recalling the Advisory Opinion of the International Court of Justice of 8 July 1996’.

Item 15(13) demands the development of verification capabilities sufficient to assure compliance with nuclear disarmament agreements. In short, a handful of the thirteen steps together constitute a suite of related measures designed to establish conclusively the obligation to seek permanent nuclear disarmament, create a negotiating venue, hold states accountable for reporting their Article VI implementation efforts and promote effective verification of a disarmed world.

Full nuclear disarmament is still a long way off and accordingly the thirteen steps included a number of more specific measures that should be accomplished or preserved in the interim. Key items include:

- Early entry into force of the Comprehensive Test Ban Treaty.
- Continuing the moratorium on nuclear tests until such time as the CTBT comes into force.
- Immediate negotiations to ban production of fissile material for nuclear weapons and the successful conclusion of those negotiations within five years (that is, by the year 2005).
- Full implementation of START II, early completion of START III, coupled with ‘preserving and strengthening’ the ABM Treaty.
- An omnibus provision (Item 15(9)) that included a call for further unilateral reductions in nuclear arsenals, increased transparency, further reductions of non-strategic nuclear weapons, additional de-alerting, a diminished role for
nuclear weapons in security policies, as well as ‘the engagement as soon as appropriate of all the nuclear weapon states in the process leading to the total elimination of their nuclear weapons’.

- Nuclear weapon states are to place excess fissile material under international verification and to arrange for the permanent non-military disposition of such material.

By the close of the 2000 NPT Review Conference, the original nuclear disarmament obligation as embodied in Article VI had been both reaffirmed and refined. There can be no doubt that included in the thirteen steps are a number of concrete guidelines for evaluating compliance with the nuclear disarmament provisions that have emerged within the NPT regime. Finally, there is explicit language. Finally, there are serious criteria for judging performance. Finally, there are interim measures that can be acted upon in the near term. Little wonder, then, that the thirteen steps were hailed as a ‘high water mark’ in the history of the NPT system.¹⁰

**Stepping away from the thirteen steps?**

In the half-decade between 1995 and 2000, the nuclear-weapon states found themselves increasingly shackled to a nuclear disarmament commitment that was growing more explicit and more concrete. Their response to this evolving reality is an important – some would say a crucial – element in the on-going politics of the NPT system.

Yet the nuclear-weapon states have always paid rhetorical obeisance to the nuclear disarmament commitment. Leader after leader has offered eloquent words in support of the eventual goal of nuclear disarmament, including half a dozen US presidents.¹¹ But despite all the rhetoric and all the arms control progress, there is little belief among the non-nuclear-weapon states that the Nuclear Five are genuinely committed to and genuinely striving toward nuclear disarmament. The thirteen steps thus represent a telling test of the intentions of the nuclear-weapon states. Do they mean what they say about nuclear disarmament? Or are their deeds at odds with their words, their policies at odds with their disarmament obligations?

From Washington has come a clear answer (Miller 2005). The Bush administration has no intention of adapting its policies to the thirteen steps. In its Nuclear Posture Review, portions of which were made public in January 2002, it enunciated a nuclear policy that envisions nuclear modernization for decades to come. For those viewing this from abroad (as well as for critics at home), it is difficult to square the indefinite retention of nuclear weapons with a serious commitment to disarm.

Beyond this broad point, US policy contravenes the thirteen steps in a number of respects. Far from initiating, or at least participating in, negotiations on nuclear disarmament, the Bush administration has nearly abandoned arms control altogether. Contrary to the thirteen steps, it has formally renounced the
CTBT. Though it has not tested or decided to test, it has displayed an interest in restoring the US ability to conduct nuclear tests that is not consistent with the call for an indefinite moratorium on nuclear testing. Contrary to the thirteen steps, the United States has been singularly unenthusiastic about the negotiations aimed at banning fissile material production for weapons and has been a major factor (but not the only guilty party) in explaining the failure to complete a fissile material cut-off treaty by 2005, as called for by the thirteen steps.

Contrary to the thirteen steps, the Bush administration unilaterally withdrew from the ABM Treaty, thereby ensuring the failure (rather than the full implementation) of START II (whose entry into force was made conditional on the continuation of the ABM Treaty). Contrary to the thirteen steps, the Bush administration essentially abandoned the START III exercise and instead brought strategic arms control to an end with a peculiar short treaty (the Moscow Treaty) of its own making. And instead of diminishing the role of nuclear weapons in US defence policy, it has highlighted their importance, their necessity, their unique contributions to US security. It is a substantial understatement to say that US nuclear policy has not conformed to the requirements of the thirteen steps. In a number of respects, it has done exactly the opposite of what is called for by the steps.

Of course, it is possible to be critical as well of the imperfect performance of other nuclear-weapon states, but the truth is that for obvious reasons Washington serves as the lightning rod on these issues. Moreover, so long as the United States has positioned itself as the primary impediment to the achievement of internationally agreed steps, the other nuclear-weapon states do not have to worry about the comprehensive fulfilment of their disarmament obligations.

Washington is anything but apologetic about its deviations from the thirteen steps. On the contrary, in the context of preparations for the 2005 NPT Review Conference, the Bush administration openly renounced the thirteen steps and refused to accept the suggestion of other states that the thirteen steps should occupy a prominent place on the agenda of the upcoming conference. It offered the explanation that the thirteen steps do not have the same legal force as the NPT itself; indeed, according to the Bush administration they have no legal standing whatsoever. As US ambassador Jackie Sanders explained in her speech at the 2005 Review Conference:

Review Conferences are political exercises meant to underscore or reaffirm existing Treaty obligations.... Review Conferences, however, are not amendment conferences, and any declarations or decisions or other text emanating from them neither supersede, nor reinterpret, nor add on to the explicit legal obligations of all Parties under the Treaty.

(United States Mission to the United Nations 2005)

This is, of course, meant to suggest that the documents forged at the 1995 and 2000 Review Conferences simply do not carry much weight and should not be treated as creating serious legal obligations. The United States argues instead for
strict fidelity to the text of the NPT and condemns its critics for straying from that text. As Stephen Rademaker, Assistant Secretary of State for Arms Control, explained:

Critics of US compliance with Article VI point in many directions to make their case against us, but the one direction in which they almost never point is the text of Article VI itself.... Even a cursory review of the Treaty text leaves so little doubt about our compliance with the obligations set forth in Article VI that our critics would have little to complain about if they restricted themselves to arguments based on the text of that article. So typically they skip over Article VI itself and rely instead on authorities outside of the Treaty text itself....

(Rademaker 2005b: 2)

Rademaker’s claim that critics do not make recourse to Article VI is rather peculiar, given that disputes over Article VI have been one of the hallmarks of the NPT system since its beginning in the 1970s. But the real import of his remarks lies elsewhere. In effect, Washington has sought to deny and refute the efforts over many years to reaffirm and elaborate the NPT disarmament obligation. It prefers to stick with the original treaty text for the same reason that many non-nuclear-weapon states wish to augment it. The vague language of Article VI enables nuclear-weapon states to claim compliance under almost all circumstances – even when they were engaged in vigorous nuclear modernization programmes.

Obviously, the argument being made by Sanders and Rademaker on behalf of the Bush administration is that the United States is complying with its Article VI obligations as specified by the treaty and is not required to do more. It does not recognize the force of the 1995 document or the thirteen steps that emerged from the 2000 conference – though the US government agreed to both.

The justification offered by the Bush administration for repudiating the thirteen steps is contestable on legal grounds. Under Articles 31 and 32 of the Vienna Convention on the Law of Treaties, it is arguable that documents emerging from NPT Review Conferences, including such measures as the thirteen steps, constitute ‘subsequent agreement’ and ‘supplementary interpretation’ that are as authoritative as the NPT text itself. As one legal analysis concludes, ‘The [thirteen] Practical Steps, as an application of Article VI, are an essential guide to its interpretation. They identify criteria and principles that are so tightly connected to the core meaning of Article VI as to constitute requirements for compliance with the NPT.’ Obviously, those who find this interpretation persuasive will not be assuaged by the Bush administration’s arguments.

But this is not a purely legal matter. At least as important is the political reality that at the NPT Review Conferences ground rules were agreed that have shaped the perceptions and expectations of many other parties to the treaty. The United States and the other nuclear-weapon states accepted these ground rules. Even airtight legal interpretations would probably not suffice to override this political reality.
Though the nuclear-weapon states, and particularly the United States, seem not to fully comprehend it, for many non-nuclear-weapon states this is an issue of fundamental importance. As one account of the dispute at the 2004 Preparatory Committee meeting reported, non-nuclear-weapon states ‘argued that the failure of the NWS to make sufficient progress towards complying with their disarmament obligation posed at least as serious a threat to the vitality of the NPT as horizontal proliferation by NNWS, since disarmament and non-proliferation are interdependent and mutually reinforcing’ (Kile 2005: 572).

Washington seems satisfied and almost brashly confident that it has fashioned an effective stance in the context of NPT Article VI disputes. As Assistant Secretary of State Rademaker proclaimed in his speech to the 2004 NPT Preparatory Committee meeting. ‘the United States is consistently meeting its obligations under every element of this critical international instrument.... There can be no doubt that the United States is in full compliance with its Article VI obligations’ (Rademaker 2004). This self-assurance finds little support in the response of the international community. A majority of states were critical of the US compliance (and that of other nuclear-weapon states) with Article VI before the Bush administration and before the thirteen steps. They are if anything even more critical today because unlike Washington they generally do credit the thirteen steps, the ICJ ruling and the 1995 reaffirmation to have meaning and relevance, if not legal force. Rebecca Johnson captures the situation as it appears to many non-nuclear-weapon states:

For far too long, the nuclear weapon states sheltered behind the vagueness of Article VI’s wording and continued with vertical proliferation and a multitude of prevarications. The vagueness has now been replaced by a very specific plan of principles, steps, and measures laid out in 1995 and negotiated in detail and agreed in 2000. Yet the nuclear weapon states behave as if there is still doubt about their disarmament obligations and the expectations of their non-nuclear partners in the non-proliferation regime.

(Johnson 2003a: 6)

Such perceptions are common outside the orbit of the United States, the nuclear-weapon states, and their close friends and allies. The Non-aligned Movement (NAM), some 100 members strong, has been long and routinely critical of Article VI non-compliance. Leading states in the developing world – Mexico, Indonesia and Egypt, for example – have been at the forefront of efforts to confront what they see as failures to implement Article VI. Other groupings have emerged to champion the cause of Article VI. The New Agenda Coalition (NAC) – formed in 1998 by the Foreign Ministers of Brazil, Egypt, Ireland, Mexico, New Zealand, Slovenia, South Africa and Sweden – came together precisely to champion greater progress toward disarmament (NAC 1998).13 Allied with and supplementing the NAC is the Middle Powers Initiative, a consortium of NGOs that exists primarily to promote disarmament.

In short, there is a huge alignment of states that are motivated and bound
together by concerns about the fulfilment of Article VI. In general, they do not believe that the nuclear-weapon states are complying with Article VI. They do not believe that the nuclear-weapon states intend to comply with Article VI. They do not accept the self-exonerating arguments offered by Washington and other NWS. They do not regard the 1995 and 2000 NPT documents to be meaningless or inconsequential. And they do not view the reluctance of the nuclear-weapon states to pursue nuclear disarmament as harmless or acceptable.

There is a wide consensus in global affairs that the nuclear-weapon states are in the wrong. Indeed, champions of Article VI can on occasion muster 150 votes in the UN General Assembly in favour of such proposals as a convention on the prohibition of nuclear weapons. This gives some indication of the political context within which the Article VI controversy plays out. And, of course, the bellicose posture and ambitious nuclear policies of the Bush administration are deemed by many critics to be particularly objectionable. Canadian diplomat Douglas Roche, who heads the Middle Powers Initiative, expresses a dismay that seems to be widely felt:

What delegates from around the world are deeply concerned about is the US attempt to change the rules of the game. At least before there was recognition that the NPT was obtained in 1970 through a bargain, with nuclear weapon states agreeing to negotiate the elimination of their nuclear weapons in return for the non-nuclear states shunning the acquisition of nuclear weapons. Adherence to that bargain enabled the indefinite extension of the Treaty in 1995.... Now the US is rejecting the commitments of 2000.... The new attempt by the nuclear weapon states to gloss over the discriminatory aspects of the NPT, which are becoming permanent, has caused the patience of the members of the Non-aligned movement to snap.... In such chaos, the NPT is eroding.

(Roche 2004: 1–2)

It is clear, in sum, that the test of the thirteen steps is being failed – certainly by Washington and more generally by the group of nuclear-weapon states. How important is this? What does it mean?

**Implications of the Article VI stalemate**

Throughout the entire history of the NPT there has been tension between the expectations of the non-nuclear-weapon states about the meaning of Article VI and the interpretations and behaviour of the nuclear-weapon states – a tension that only increased once the end of the Cold War removed the primary rationale for the nuclear arms competition.

This long-running play has been marked by well established and easily recognizable patterns. Non-nuclear-weapon states voice endless complaints about the failure of the NWS to comply with Article VI as they understand it. Every five years at an NPT Review Conference, the non-nuclear-weapon states muster their
grievances and protest the inadequate progress toward nuclear disarmament. Five years on, everyone mobilizes to go at it again.

For their part, the nuclear-weapon states regularly make earnest expressions of their commitment to the long-term goal of nuclear disarmament and trumpet any and all steps that they have taken that can be represented as fulfilments of Article VI. They insist that they are in full compliance with Article VI as written. Though occasionally compelled – as in 1995 – to make concessions, they reject the notion that they are constrained by anything but the text of the NPT and rebuff all efforts to ensnare them in additional firm disarmament commitments. Every five years they grit their teeth and take the pummelling that is regularly delivered at the NPT Review Conferences. For Washington, for the other nuclear-weapon states, this is a modest cost of managing the NPT regime. Five years on they grit their teeth and do it again. So it has gone for more than three decades.

How long can it go on? Can this pattern persist for another three or four decades? If the NPT regime has functioned reasonably successfully despite this protracted Article VI stalemate, what are the reasons for concern about the ongoing disarmament controversy? It is possible that, as in the past, the NPT regime can limp along for years to come without some breakthrough or progress that alleviates the Article VI frictions?

There are a number of reasons for thinking that the potential implications for the maintenance of the NPT regime are quite serious, that the failure to address the Article VI pressures can have very damaging consequences for the NPT system. The perennial discord over nuclear disarmament intersects with a number of issues that can affect the health and durability of the NPT regime.

First, there are many who believe that over the long run the bifurcation of the world into nuclear haves and nuclear have-nots is simply untenable. The mounting frustration and impatience of the non-nuclear-weapon states, plainly discernible in recent years, is evidence that the persistence of the Nuclear Five has corrosive effects. Discussing the ‘unravelling of the NPT’ and the collapse of the 2005 NPT Review Conference, for example, Lawrence Wittner (2005) notes that ‘The non-nuclear nations hit sharply at the failure of the nuclear powers, and particularly the United States, to honour their commitments to nuclear disarmament’. The existence of this discriminatory nuclear world is clearly a source of vexation for many non-nuclear-weapon states – one that already bedevils the NPT regime and could undermine it even more in the future.

Second, though the disarmament obligation embedded in Article VI has often been treated by nuclear-weapon states as token, or subsidiary, or as largely rhetorical, many non-nuclear parties to the treaty see this provision as part of the grand bargain that lies at the heart of the NPT: states without nuclear weapons agreed to forsake them; states with nuclear weapons agreed to eliminate them. This bargain is part of what made it acceptable to divide the world for a while into the haves and have-nots. Indeed, some suggest that Article VI was instrumental in breaking the impasse that existed between haves and have-nots in the negotiation of the treaty.14 But if it appears that the nuclear-weapon states are
not going to live up to their end of the bargain at any time in the foreseeable future, this will cause disaffection and could undermine the regime. As Lawrence Scheinman has written, ‘failure to continue to make significant progress in nuclear arms reduction eventually will weaken the treaty . . .’ (1995: 228).

Third, success in preventing the proliferation of nuclear weapons depends at some fundamental level on the ability to make a credible and compelling argument that they are neither necessary nor desirable, that whatever advantages they confer are outweighed by the costs. It is difficult to sustain this argument when the large and powerful states which possess nuclear weapons routinely proclaim that such weapons are essential to their defence postures, that they provide unique and crucial security benefits and that they must be retained in the national arsenals indefinitely. The disarmament obligation that constitutes the essence of Article VI is unacceptable to and is not honoured by the nuclear-weapon states because they see value in the possession of nuclear weapons, they perceive advantage in retaining them and they have found it so far unthinkable to give them up (though they may say otherwise from time to time).

Complying with Article VI would communicate the message that nuclear weapons are regarded as dispensable even by the states that possess them and that the case for acquiring and retaining nuclear weapons ultimately is not convincing. By their behaviour the nuclear-weapon states send a different – essentially opposite – message: nuclear weapons are important, worth having and essential to keep. This is not a message conducive to the good health of the NPT regime or to success in non-proliferation efforts.

Fourth, the ideal normative environment for promoting non-proliferation is one in which nuclear weapons are widely or even universally regarded to be illegal, illegitimate and immoral. That is, to inhibit nuclear proliferation it is desirable not only to devalue nuclear weapons but to de-legitimize them. This would put in place an additional (normative) barrier on the path to nuclear proliferation. If the nuclear-weapon states had fulfilled Article VI or were in the process of doing so, they would be in a position to contribute to – even to lead – the process of de-legitimization. Instead, in a world where many do already believe that nuclear weapons are illegal, illegitimate or immoral, the nuclear-weapon states are the most forceful exponents of the view that nuclear weapons are legal and legitimate instruments of security policy. Here again, it is the nuclear-weapon states who are, in effect, making the case for nuclear weapons even as they struggle to prevent further proliferation. This contradiction in the position of the nuclear-weapon states derives from the need to justify their own possession of nuclear weapons – a contradiction that would disappear if the nuclear-weapon states would embrace the obligation to disarm.

Fifth, nuclear acquisition by proliferating states is normally the culmination of a series of decisions over a long period of time. Typically, there will be an internal debate that sets the arguments for acquisition against the case for eschewing nuclear weapons. A comprehensive approach to preventing proliferation should keep in mind the potential impact that NWS arguments and choices
may have on those internal debates. It follows from the previous points that advocates of nuclear acquisition will find congenial and supportive the proposition that nuclear weapons are valuable and legitimate instruments of national defence. Aspiring proliferators will, of course, have complex and often distinctive reasons for pursuing nuclear weapons; it is not sufficient to suggest that the nuclear inventories of the existing weapon states alone cause or justify nuclear proliferation.

But it is still appropriate to be concerned that arguments launched by the nuclear-weapon states in defence of their retention of these weapons or choices made by the nuclear-weapon states to modernize and perpetuate their nuclear arsenals may help tip internal debates in the direction of proliferation. As Ashton Carter has written, ‘The decisions of in-between states are probably strongly shaped by their perception of the nuclear “order” that the United States represents and leads, partly by example’ (2004: 82). Former UN Under-secretary for Disarmament Jayantha Dhanapala makes a similar point, though framing it somewhat differently: ‘The nuclear powers have a particularly heavy burden to reinforce this regime by demonstrating through unilateral and multilateral actions how the interests of international peace and security are best pursued without nuclear weapons’ (2001: 5).

It is hard to believe that the arguments for acquiring nuclear weapons would play out the same way in a world in which nuclear weapons had been genuinely de-valued and de-legitimized, in which nuclear disarmament had been substantially achieved, in which international opprobrium and opposition would confront any state that attempted to breach the universal disarmament norm. Today, anyone who wishes to make the case for the utility and acceptability of nuclear weapons need only quote Donald Rumsfeld.

Sixth, in general the nuclear-weapon states – and the United States in particular – are keen to establish strict standards for compliance with the NPT and stern enforcement against those who violate their obligations under the treaty. Indeed, in connection with its war against Iraq, the Bush administration made the claim that the failure to live up to arms control and disarmament commitments – in Iraq’s case involving both treaties and UN resolutions – was grounds for war. But it is difficult to effectively advocate that others be held completely accountable under the NPT when the United States and the other NWS are viewed as being delinquent themselves.

Why should others be taken to task when the Nuclear Five are themselves failing to comply with treaty obligations under Article VI, as others see it? Why is it that the exonerating self-judgements of the United States and other NWS should be regarded as the final word but the explanations of the Iranians or other suspected NPT parties are viewed with enormous suspicion? Why should others face substantial penalty for NPT transgressions when the NWS flout the treaty with impunity? The Bush administration, like others before it, has persuaded itself that it is living up to Article VI – but the key is persuading others that such is the case.

Having failed to do so, the United States appears in many eyes to be the hypocritical champion of an obvious and unattractive double standard: others
must observe the treaty scrupulously but the United States reserves the right to define the meaning of Article VI and to fulfil it in its own way and at its own pace. As one post-mortem on the 2005 Review Conference characterized it, in effect ‘The American position was to deny that the treaty has any force over the United States while at the same time demanding that it be applied vigorously against others’ (Williams 2005). In many eyes, Washington’s high intolerance for the transgressions of others contrasts markedly with its dismissive attitude towards its own obligations. Thus the stern reminder offered by the Carnegie Endowment’s prominent report on Universal Compliance: ‘The burden of compliance . . . also applies to nuclear weapon states that are not honouring pledges that they have made’ (Perkovich et al. 2005: 15).

Seventh, effective management of the NPT regime requires extensive cooperation in a club with nearly 200 members. No matter what the United States or the other NWS may prefer, successful responses to nuclear proliferation challenges and crises, serious enforcement in the face of significant transgressions by member-states and further refinements to improve the NPT system all depend on the agreement, support and often the active participation of many other states. Such cooperation is difficult to achieve in an environment marked by ill will, distrust and allegations of bad faith against the NWS over Article VI.15 As a Canadian diplomat at the 2005 NPT Review Conference said, ‘If governments simply ignore or discard commitments whenever they prove inconvenient, we will never be able to build an edifice of international cooperation’ (quoted in Wittner 2005: 2).

The Bush administration has now experienced this first-hand. It hoped to use the 2005 NPT Review Conference to confront the very difficult cases of North Korea and Iran and to raise in a serious fashion its concerns that Article IV of the NPT – which establishes the right of member-states to civilian nuclear technology – turns out to be a loophole that allows potential proliferators to acquire dual-use, weapons-relevant fissile material production capabilities under cover of the treaty. These were in truth legitimate issues to raise. But the prospects for treating them in a meaningful way were never very great because of the acrimony between the United States and many of the states parties to the NPT, a good portion of which is related to Article VI. As one expert commented just as the 2005 conference began, ‘The [Bush] administration’s goals are likely to be frustrated by its dismissive and inflexible attitude toward many other countries’ concerns and its own treaty obligations.’

Specifically, other capitals complain that Washington is not doing enough to pursue the elimination of its nuclear arms.16 And in the event, the 2005 Review Conference was a near total failure, unable to make progress on any significant issue. Here a large opportunity to address issues of grave concern to the United States was squandered. One of the closest observers of the NPT scene, Rebecca Johnson, has offered this explanation for the collapse of the 2005 gathering: ‘Its failure was due to political manoeuvring and the self-protection rackets run by a small number of states who wanted to keep their own nuclear options as unfettered as possible’ (Johnson 2005b: 1). In other words, the nuclear-weapon states,
above all the United States, refused to allow their own conduct to be subjected to the criteria established by the 1995 and 2000 NPT documents. Indeed, at the 2005 gathering, Washington was opposed even to allowing any reference to those earlier agreements in the 2005 documents. As Patricia Lewis from UNIDIR explained, at the 2005 NPT Review Conference, ‘the main problem was how to refer to the agreements of 1995 and 2000. The USA and some key allies wanted no reference to them whatsoever – as if attempting to erase them from old photographs and memories – as if somehow, by not referring to them, it meant that they just did not exist’ (Lewis 2005). The NPT will not be restored to good health and progress will not be made on hard issues so long as this large impediment to cooperation persists.

In sum, the nuclear disarmament controversy is not simply a narrow and technical legal matter. The nuclear-weapon states cannot make it go away or minimize its implications simply by keeping their eye focused exclusively on the text of the 1968 treaty and by making a good speech at the NPT Review Conferences. They cannot avoid confrontations over Article VI by proclaiming in a self-satisfied way their full compliance with the disarmament obligation as they prefer to see it.

The health, effectiveness, progress and future of the NPT regime depend on the reactions of the large number of non-nuclear-weapon states, a large majority of whom believe that the nuclear-weapon states – and especially the United States – simply do not take Article VI seriously and do not intend to eliminate their nuclear arsenals in any politically meaningful time frame. This is a political reality that affects the commitment of non-nuclear-weapon states to the regime. It affects their incentives to respect the regime. It affects the likelihood that some among them will wish to seek nuclear weapons. It affects their willingness to cooperate in order to strengthen the regime. It affects their willingness to support strong enforcement measures against those who violate or abuse the regime. The costs of attempting over large sweeps of time to finesse the Article VI issue have been large and obviously damaging to the regime.

Notes
1 On Article VI as an inducement to non-weapon states, see Bunn 2003. Bunn was a participant in the negotiation of the NPT.
2 The importance of this point is explained well in Müller 2005a.
3 Even in the early 1980s, one leading expert was already asking whether dissatisfaction with the fulfilment of Article VI might lead some states to withdraw from the NPT. See Simpson 1984: 173.
4 All references to the ICJ Advisory Opinion are based on International Court of Justice 1996.
5 There is a fairly extensive literature on the ICJ opinion on nuclear weapons. A useful compendium is Lawyers Committee on Nuclear Policy (n.d.). For a quite extensive set of analyses in one volume, see Boisson de Chazournes and Sands 1999.
6 This story is told in Johnson 1997a. For further discussion, see Johnson 1997b. Johnson reports that 109 states supported Myanmar’s resolution calling for the time-bound elimination of nuclear weapons.
This view is correct. As one description puts it, ‘The Advisory Opinions of the Court [the ICJ] are influential and widely respected interpretations of the law, but they are not authoritative, and they are inherently non-binding under the statute of the Court’. From the discussion of the International Court of Justice provided at en.wikipedia.org/wiki/International_Court_of_Justice#Advisory_Opinion.

China often stands apart from the other four nuclear-weapon states on these matters, knowing it can count on the others to block steps that might impinge on its own nuclear policies.

For a well informed reconstruction of the developments that led to the 2000 NPT Review Conference Final Document, see Rauf 2000.

See Rauf 2001: 15. In this document Rauf provides a very useful account of the origins, content and early status of the thirteen steps.

See, for example, Cranston 2001 (p. 3 of web version), which notes the support for nuclear disarmament of every US president from Kennedy to Clinton.

Lawyers’ Committee on Nuclear Policy 2005: 5. I have relied on this essay for the brief discussion in this paragraph.

The founding charter of the NAC was essentially an appeal for serious movement on disarmament.

See, for example, Weiss 2003, who describes how during the negotiations leading to the NPT, the non-nuclear-weapon states were attacking the ‘unacceptably discriminatory’ nature of the emerging treaty. ‘The addition of Article VI to the treaty,’ Weiss writes, ‘blunted these attacks and allowed the treaty to go forward . . .’.

Echoing this point is Weiss 2003, who writes: ‘If collective action to confront a proliferator and roll back or otherwise neutralize its program is to be successful, the most powerful nations must come to the table with clean hands if their leadership is to be viewed seriously and not cynically’ (p. 1, web version).

Boese 2005b, who also observes, rather colloquially, that ‘It is hard to hold other countries to their nuclear commitments when we blow off some ourselves’. 7 This view is correct. As one description puts it, ‘The Advisory Opinions of the Court [the ICJ] are influential and widely respected interpretations of the law, but they are not authoritative, and they are inherently non-binding under the statute of the Court’. From the discussion of the International Court of Justice provided at en.wikipedia.org/wiki/International_Court_of_Justice#Advisory_Opinion.

China often stands apart from the other four nuclear-weapon states on these matters, knowing it can count on the others to block steps that might impinge on its own nuclear policies.

For a well informed reconstruction of the developments that led to the 2000 NPT Review Conference Final Document, see Rauf 2000.

See Rauf 2001: 15. In this document Rauf provides a very useful account of the origins, content and early status of the thirteen steps.

See, for example, Cranston 2001 (p. 3 of web version), which notes the support for nuclear disarmament of every US president from Kennedy to Clinton.

Lawyers’ Committee on Nuclear Policy 2005: 5. I have relied on this essay for the brief discussion in this paragraph.

The founding charter of the NAC was essentially an appeal for serious movement on disarmament.

See, for example, Weiss 2003, who describes how during the negotiations leading to the NPT, the non-nuclear-weapon states were attacking the ‘unacceptably discriminatory’ nature of the emerging treaty. ‘The addition of Article VI to the treaty,’ Weiss writes, ‘blunted these attacks and allowed the treaty to go forward . . .’.

Echoing this point is Weiss 2003, who writes: ‘If collective action to confront a proliferator and roll back or otherwise neutralize its program is to be successful, the most powerful nations must come to the table with clean hands if their leadership is to be viewed seriously and not cynically’ (p. 1, web version).

Boese 2005b, who also observes, rather colloquially, that ‘It is hard to hold other countries to their nuclear commitments when we blow off some ourselves’.
Part II

Encountering proliferators, real or potential
5 The exceptional end to the extraordinary Libyan nuclear quest

Harald Müller

In December 2003, Libya officially declared its programmes for the production of nuclear and chemical weapons and of long-range missiles, confirmed its readiness to renounce them for good and took bold steps to open them up for investigation and inventory-taking by the appropriate international authorities – the International Atomic Energy Agency (IAEA) and the Organization for the Prohibition of Chemical Weapons (OPCW), and US and British expert personnel, respectively. This sequence of action, and the ensuing implementation of Libya’s promises, sealed one of the most spectacular cases of successful, peaceful de-proliferation in history.

There are several states that at one point considered the nuclear option, took steps to realize it and sometime after these first steps – either early on (perhaps after a simple feasibility study), or very late in the game (perhaps after having actually developed some complete weapons) – decided to revoke this policy and stay (or become) non-nuclear (Müller 2001).

However, the Libyan case has several features that are particularly remarkable in comparison with such spectacular previous de-proliferation successes as those of South Africa, Argentina, Brazil, Romania, or the three nuclear successor states to the former Soviet Union that renounced the nuclear weapons inherited from the erstwhile superpower. Libya’s policy change on nuclear weapons did not come – as it did for all the countries just mentioned – in connection with a revolutionary change in the political system.

The Libyan turnabout was not the result of a public diplomatic campaign either – as in the cases of the three post-Soviet successor states, or more recently with North Korea or Iran. It was also not the obvious effect of targeted short-term military or economic pressure, as in the Iraqi or Iranian cases, but occurred in a period when the peak of sanctions had already passed.

Rather, it came about in an environment of systemic continuity, and also of continuity in other elements of the country’s foreign policy (including a critical stance towards the Middle East peace process and a hostile attitude towards Israel). As far as we can know today, the reversal appears to have been the outcome of various factors:
• A major reorientation of the foreign policy thinking of Libya’s leadership with regard to the utility of military-based power politics.

• A fundamental rearrangement of the objectives and ambitions emerging from the depressing experience and consequences of decade-long economic sanctions against power-oriented external behaviour, and possibly a reshuffling of priorities from power, status and prestige to domestic welfare and growth as the only way to keep the regime in power. (This was probably the decisive motivation, as will be argued below.)

• Long-standing diplomatic efforts, notably by the European Union, to entice Libya into more cooperative relations with the rest of the world.

• A determined effort at WMD de-proliferation diplomacy by the United States and the United Kingdom, with a view to achieving an agreement with the Libyan authorities on the complete, supervised dismantling of the country’s WMD stocks and the facilities devoted to producing them.

The Libyan case opens two related questions. First, why did Libya – at best a small power in a relatively benign geo-strategic environment and not confronted with any serious existential threat that might justify the quest for an ultimate deterrent – embark upon the road towards a nuclear weapons capability in the first place? Second, after this fateful decision had been taken, why would Libya turn back at the very moment when the opportunity to evolve towards a nuclear power appeared to open, due to the external delivery of sensitive technology?

This chapter starts with a brief overview of Libya’s political history. Then, I outline Libya’s nuclear-weapons programme, and the deal struck in 2003 to dismantle it and other WMD activities. Against this background for the ensuing analysis, I then proceed to an interpretation of the motivations that led Libya to start and conduct these programmes. Next, I assess the mixture of motivations that led the leadership to assent to the demands for laying down its weapons of mass destruction. In this account, I arrive at a critique of the triumphalist narrative propagated by the neo-conservative camp in the United States. Instead, I join those who see in the Libyan decision a much more complex pattern than surrendering to military threat. In conclusion, I indicate – very cautiously – a few more general lessons that might be learned for non- and de-proliferation policy.

Due to the nature of the country under analysis, much is speculation as far as decision-making motivations are concerned. I rely, as best I can as a non-Arab-speaker, on sources and on the literature, drawing to a certain degree, as a background, on talks I conducted during a visit to Tripoli in June 2005, from which – for reasons that need not be elaborated here – it is not possible to quote directly.

**Political developments leading up to Libya’s WMD renunciation**

Libya suffered colonialism at the hands of the nearest European country, Italy, and was a battlefield during the Second World War (Simmons 2003: ch. 1; El-Kikhia 1997: 17–24). Like most Arab countries, it received its share of humilia-
tion by the colonial powers, with the customary consequences for world view and political culture this has engendered across the Arab world: a strong resentment of colonialism, imperialism and Western arrogance has been deeply inculcated in the Libyan soul, elites and general population alike. Israel, in this context, is seen as a symbol and a tool of imperialism by other means.

Independence in the aftermath of the Second World War proved a mixed blessing, as the ruler, King Idris, was a uniquely incapable combination of a hedonistic exploiter of his country’s wealth, largely disinterested in the fate of his people, and absolutely obedient to the wishes of the (Western) powers, notably the oil companies and their political masters. Indicative of this attitude were not only the relatively favourable conditions under which oil concessions were given (especially to US companies), but also the admission of the then largest US airbase outside the US homeland, Wheelus Base, on Libyan territory over which the United States maintained complete control and sovereignty.

In 1968, a group of middle-rank officers, led by the flamboyant and charismatic Muammar Gaddafi, staged an almost bloodless coup d’État to dethrone Idris, and seized power, to the considerable satisfaction of quite a few Libyans.

Gaddafi quickly became the bête noire of the West. He began by playing small and big oil companies against each other, driving his oil royalties upwards, before nationalizing oil and gas reserves altogether (Vandewalle 1998: 74–80). He excelled in anti-imperialistic and anti-zionistic rhetoric, expelled the US Air Force from Wheelus Airbase in 1970, and trampled the nerves of his neighbours by developing schemes for eliminating borders and integrating into one single Arab state – while these same neighbours were busy trying to build solid nation-states.

Moreover, the Libyan leader frequently claimed territory or maritime areas which these neighbours believed to be their own (Algeria, Chad, Niger, Tunisia) (Cordesman 2002b: 180); he supported terrorist groups from the PLO to the IRA, developed friendlier relations with both the Soviet Union and China, and put his (limited) weight behind every project that annoyed the West in its stubborn insistence on keeping its superior position over the rest of the world. He became a real concern when he tried to make Chad, Libya’s southerly neighbour and a possible resource of natural uranium, a client state by a sizable military intervention on the side of one party in the on-going civil war, and sought to annex the northern part of this country, the Aouzou strip.

By the late 1980s, however, Gaddafi’s ambitions had run their course. His ideas of North African–Arab integration had floundered. Chad was lost. The depression of oil prices had made nationalization a rather bad deal, and he had hardly any influence on the course of events in the Middle East, the area where his political interest was still mainly focused. It was also during these years that his relations with the West, and the United States in particular, reached an absolute low. Already in 1975, the United States had emplaced an embargo on the export of strategic goods to Libya. In 1977, the Pentagon put Libya on the list of potential enemies of the United States, and a sequence of increasingly hurting sanctions was enacted by the US government. In 1979, Libya featured on the US list of states sponsoring terrorism.
Under President Ronald Reagan, Washington stepped up attempts to get rid of Gaddafi. Support was given to exile groups, and Libya’s claim over the Gulf of Syrte beyond its territorial waters according to the law of the sea was used by the US administration to stage impressive naval manoeuvres that resulted in air clashes in 1981. In the following year, all US exports to Libya, save food and medicine, were banned, as was the import of Libyan oil into the United States.

In early 1986 a real maritime air/sea battle ensued in which Libya lost aircraft and ships. In retaliation for this incident, two US servicemen were killed in the bombing of the discoteque La Belle in Berlin, Germany, and the trail led back unmistakably to the Libyan secret service. In response, President Reagan ordered a massive air attack against Libya, aimed at reducing the terrorist infrastructure in the country, and in the clear hope of killing Gaddafi. The Libyan leader escaped, but an adopted daughter lost her life and his two youngest sons were wounded. A sense of vulnerability probably dawned on him. In the same year, the European Union joined the United States in imposing sanctions upon Libya (Stanik 2003: chs 5–7).

Libya’s next moves were defiant ones. It sent two Scud missiles in the direction of the Italian island of Lampedusa which hosted US military installations (without causing damage), and in 1988 two Libyan agents led an operation that resulted in blowing up a US passenger aircraft over Lockerbie, Scotland, killing 259, among them 189 Americans. A similar terrorist crime was committed one year later, when a French airliner was destroyed over the desert of Niger. Whether the Libyan leader had been personally implicated in these crimes, or if overzealous underlings committed them while Colonel Gaddafi was already working for a change (economic and political reform had started earlier), remains a matter for speculation (El-Kikhia 1997: 144).

In reaction to these transgressions of international law, the UN Security Council first requested Libya in UNSC/RES/731 to extradite the suspects to the aggrieved countries, and then set in UNSC/RES/748 of 1992 a deadline of two weeks for Libya to comply. After Libya did not respect this ultimatum, Resolution 748 automatically imposed sanctions: a prohibition on flights in and out of Libya; a reduction of diplomatic presence; an embargo on military exports, aircraft spare part exports, and special oil and refinery equipment; as well as a freeze on Libyan financial assets abroad. Sanctions were further enhanced by UNSC/RES/883 in 1993 (Strunz and Dorsch 2000: 35–7). In addition, the US sanctions instruments were further hardened by the Iran–Libya Sanctions Act of 1996 that directed the US President to impose sanctions against foreign companies that invest heavily in the Libyan oil sector (ibid.: 39). Libya had now a hard time keeping its fledgling oil industry in shape and was generally impeded in any attempt at industrial-technological development, not least since revenues from oil exports amounted to 95 per cent of the country’s total foreign earnings.

That the erstwhile partner Soviet Union, later Russia, joined the United States in this confrontation, rather than siding with Libya, may have further impressed upon the Libyan leadership that its course would lead nowhere. Indeed, in the early 1990s, the first signs became visible of attempts by Tripoli to explore
possibilities for rapprochement. In 1992, Libya indicated for the first time that it might be prepared to put its weapons of mass destruction (WMD) on the negotiation table. One year later, secret talks on compensation for the terrorist acts began.

In 1996, Gaddafi wrote officially to President Chirac and expressed his willingness to cooperate in solving the issue of the destroyed French airliner. These attempts were at first so cautious and the steps taken so small that few people took any notice. Libya was seeking to find out what the conditions would be for getting the sanctions revoked. Until Tripoli could be sure about the possibility of success without a loss in regime security, and of the sincerity of its negotiation partners, it would not principally and openly change its policies. Protracted negotiations on the extradition of the culprits of the crimes in Berlin, Lockerbie and Niger ensued. In 1998, the year when Libya expelled the Abu Nidal terrorist organization, a compromise was found for the Lockerbie case: the accused would be put before a Scottish court temporarily residing in The Hague. This took place in 1999. Consequently, the Security Council revoked the sanctions it had imposed, and the EU relaxed some of its own sanctions. At this point, Libya made another approach to discuss its WMD (Cordesman 2002b: 188–90; Strunz and Dorsch 2000: 53–81).

Nevertheless, US and some EU sanctions continued to exist; the next demand on Libya was for proper compensation for the damage done, notably payments to the families of the victims. Again, protracted negotiations went on in a quiet environment, out of the public view. While they were under way, Libya made another approach concerning its WMD programmes: in 2001, Musa Kusa, chief of Libyan intelligence, indicated to interlocutors of the CIA and the British intelligence service MI6 that Libya might be willing to bargain away its weapons of mass destruction. Astonishingly, the US answer appears to have been, as in 1992 and 1999, that the compensation issue would have to be settled satisfactorily before other subjects – even WMD – could be fruitfully debated (Indyk 2004).

Consequently, the Libyans made their fourth attempt (see below) to deal with WMD, when an agreement on compensation was virtually achieved: in early March 2003 – shortly before the Iraq war started – Libyan authorities declared to their US and British counterparts that it was time to settle the WMD issue, and that Libya was prepared to consider all possibilities. Within about half a year, the details of a complete, verified renunciation of WMD were clarified. On 19 December, Colonel Gaddafi declared Libya’s readiness to place all weapons of mass destruction, including the related facilities, under international control.

As Libya decided to renounce weapons of mass destruction, it did not reflect the isolated decision of one single individual. Of course, Gaddafi was decisive for the move, which would not have occurred if he had not changed his mind; although not part of the formal structure of government, he claims authority derived from his revolutionary role. But the shift in policy must also have reflected the longing of major centres of power in the country – the military (particularly the leadership of the 45,000-man army), heads of the paramilitary forces such as the Revolutionary Guard Corps, oil industry managers, the
intelligence services and the power-holders in the General People’s Congress and Committee – for a decisive change for the better in economic terms, a desire to overcome the deep isolation dividing Libya from the rest of the world, and disillusionment with the self-styled role as Arab champion.

They probably also shared the insight that Libya should not strive for more status than its power resource basis could possibly support. Moreover, through all the sudden championing the cause of combating proliferation, Libya was in fact positioning itself far more at the centre of world politics than it ever had been during its politics of defiance.

**Libya’s nuclear programme**

From the historical record it appears that the Libyan leadership had started, soon after the 1969 revolution, to toy with the thought of acquiring nuclear weapons. Reportedly, there were several attempts to acquire a nuclear weapon by simply buying it off the shelf. Muammar Gaddafi, according to some accounts, first approached Egypt (in the mistaken belief that Cairo would be in a position to help) and then Chinese Prime Minister Chou En-lai, but was politely rebuffed.

Libya is also said to have invested in Pakistan’s nuclear-weapons programme in the hope of obtaining immediate benefits – which, however, remained elusive (Cremasco 1987). The only tangible utility to emerge from this relationship was the connection to the Khan network which, after the mid-1980s, did supply Libya with various items and technologies for its nuclear-weapons programme. On the other hand, as expressed by many Libyans after the revelations, the customer was not overly satisfied with the deliveries and services rendered by the supplier.

Before the Pakistani connection produced these limited outcomes, Libya had tried to obtain nuclear technology transfer with fewer military overtones from Argentina, France, India and Belgium, but nowhere really succeeded; the Belgian government pondered the Libyan request for cooperation very long, and initialled a nuclear agreement in 1984 whose implementation might have helped Libya in acquiring some know-how on sensitive technologies. But it was not implemented, due to strong US and fellow European pressure. What was left, then, was the Tajoura nuclear research centre close to Tripoli, built by the Soviets in the early 1980s, and supplied (and largely manned) by the same. The Soviet Union was very careful to keep tight control over this centre, so any use for non-civilian purposes was rather limited (Cremasco 1987: 260–3).

The official nuclear programme was permanently under IAEA safeguards, according to the safeguards agreement that Libya and the IAEA had signed under the Nuclear Non-proliferation Treaty, to which Libya had been a party since 1975. Relatively early, however, clandestine activities started. This involved, first, the acquisition of 2,263 tons of yellowcake in 1978–81; small-scale consignments of uranium fluoride and uranium oxide of various molecular composition were imported in 1985. Later on, in 2000, 2001 and 2002, small amounts of natural and depleted uranium were bought from the Khan network, without notifying the IAEA.
Libya conducted uranium conversion experiments between 1983 and 1989, but without much success, and resumed these experiments after 1994; negotiations with a foreign company for building a conversion complex began in 1981, but never yielded conclusive results. A modular conversion facility was ordered in 1984 and partially delivered in 1988 and 1994, but was stored until 1998, when it was partially assembled at Saawani and later at Al Khalla. However, no uranium was processed in this facility, which would have possessed an annual feed capacity of 30 t uranium.

The most spectacular part of the programme was the attempt to build an enrichment facility. This approach started in the early 1980s with research and development, led by a foreign expert. But work proved futile: by the time of his departure in 1991 not a single centrifuge had been produced; however, maraging steel tubes with a diameter resembling that of L-2 centrifuges were imported during that time. Following a decision to revive the programme in 1995, Libya acquired, from 1997 on, twenty pre-assembled L-1 centrifuges and components for 200 more such machines (early 1960s design) from the Khan network, and tested one machine successfully. In 2000, the installation of three cascades, composed of nine, nineteen and sixty-five L-1 centrifuges, got under way. However, no nuclear material was ever processed in these assemblies. Contamination of some of these imports with low and high enriched uranium particles occurred in the country of origin, Pakistan.

Also in 2000, Libya obtained two more advanced L-2 centrifuges and ordered 10,000 such machines. Components began to arrive in 2002, but no rotors were delivered: without these, the centrifuges were worthless and could not be assembled. Libya had also started orders and imports to build up a domestic centrifuge production capability, and large amounts of maraging steel and high strength aluminium alloy. However, these imports were still in crates when IAEA inspectors arrived after Libya’s December 2003 announcement to open up and abandon its nuclear-weapons programme. Libyan experts received centrifuge-related training by foreign experts in various locations. Imports of both conversion and enrichment technology were needed to push a nuclear-weapons programme forward, as Libya was in no position to develop these advanced technologies on its own.

In addition to trying enrichment, Libya conducted small-scale experiments with reprocessing irradiated uranium targets for extracting plutonium. It had also received information related to nuclear-weapons design, but no facilities dedicated to weaponization purposes were found by inspectors (IAEA 2004a, b, c).

The 2003 deal: Libya’s concessions

The agreement reached in 2003 demanded considerable concessions from Libya. It was framed in a way that would definitely ensure that the country was completely free of weapons of mass destruction. The following steps were to be taken by Libya:
• Eliminate the chemical and nuclear-weapons programmes completely.
• Make a full and complete declaration of its nuclear activities to the IAEA (and the chemical equivalent to the OPCW).
• Accept comprehensive inspections with a view to establishing a new initial inventory of its nuclear activities, equipment and technology.
• Sign and ratify the Additional Protocol to the Non-proliferation Treaty.
• Destroy all chemical weapons stocks and munitions, and become a party to the Chemical Weapons Convention (CWC).
• Open up for inspections to have these activities verified.
• Dismantle all ballistic missiles beyond 300 km range and able to carry a payload of 500 kg (the parameters of the Missile Technology Control Regime).
• End support for terrorism.

According to the IAEA and the OPWC, Libya followed its promises strictly. It also acceded to the CWC, as agreed, and to the Comprehensive Test Ban Treaty (CTBT). Highly enriched uranium, centrifuges and centrifuge parts and the essential components of the missile programmes, including now prohibited missiles, were flown out by US transport aircraft. Finally, Libya announced the end of all military trade with countries of proliferation concern (Arms Control Association 2005).

In turn, the United Kingdom and the United States promised to eliminate, and actually went on to dismantle, the remaining sanctions against Libya, and to assist Libya’s entry into the World Trade Organization. They further agreed to set up particular programmes of assistance to Libya, which included advice on reforming the juridical system, and funds for projects to help provide work for scientists and engineers formerly employed in WMD activities, after the model of the International Science Centres in Moscow and Kiev. The country was also granted the development of good bilateral relations and broad international cooperation.

This promise was underlined by a series of high-ranking visits to the formerly isolated state, including British Prime Minister Tony Blair. The last US economic sanctions were removed in September 2004, after Washington had already dropped its objections to Libya’s joining the World Trade Organization; EU sanctions on military sales, the final remnants of the confrontation period, were lifted three weeks later (Kerr 2004d, e). These steps show a readiness on the part of Western states to offer attractive incentives, even though Colonel Gaddafi later complained that too few good things were happening and that he had rather expected a kind of ‘Marshall Plan’.

It is also indicative that the notion of regime change did not figure prominently in the agreement. While Libya admitted visitors from Amnesty International, accepted advice on its judicial system and could obviously not object to the raising of human rights issues during diplomatic encounters, it was not forced in any way to relax its strictly authoritarian system of rule or to weaken Gaddafi’s personal influence on policy. Given this state of affairs, it is perhaps
not surprising that former US Under-secretary of State John Bolton, a proponent of regime change as a condition for successful counter- and de-proliferation, was reportedly not permitted to interfere with the negotiations once they were under way.

From a Libyan perspective, the following factors in the balance sheet of the deal may be seen as negatives:

- The Libyan leadership had to admit past mistakes and to make a clear turnabout in the policies pursued so long; this certainly involved the risk of losing face at home and abroad, notably among the more radical elements in the Arab public.
- Hopes of basing national security on autarchy were lost for good. With the complete extinction of the nuclear programme, the vague hope of an impregnable deterrent was gone; with the elimination of the chemical weapons, even the relatively weak dissuasive barrier against a conventional invasion of Libya by virtue of complicating the military calculus of potential aggressors was lost.

On the other hand, the gains were quite considerable:

- Libya was no longer a potential target of US pre-emptive military action.
- This new relationship also protected the regime from becoming the target of determined regime-change policies. By divorcing WMD from the human rights/democracy issue, Gaddafi cut the US enemy image by half, taking the zeal out of negative US attitudes towards his regime.
- In the future, Libya could hope to enjoy a certain prospect (if not guarantee) of great-power protection against possible aggressions by its neighbours.
- Moreover, the risk of conflict with the same neighbours was sharply reduced by Libya’s renunciation of aggressive schemes, including terrorist ones, against these countries. By ceasing to be a virtual member of the ‘Axis of Evil’, and by mending fences with its neighbourhood, Libya basically eliminated the security motivations that had driven the acquisition of WMD for most of the preceding two decades.
- Given the prospect of earning praise, acceptance and a closer relationship with the United States and the Western world in general, Libya might be able to make up in terms of prestige what it had lost by the volte-face.
- Finally, the prospects for economic improvement by the lifting of the embargo opened the opportunity to enhance the status of the country, freeing more resources for the government for internal distribution and redistribution, and thus helping to strengthen the legitimacy of the current system of rule and the individuals and groups at the top.

In weighing these against each other, most observers would see a positive balance in the outcome of the deal for Libya. The perspective of ‘most observers’, however, is not necessarily that of the Libyan leadership. What is
negative and what is positive is, after all, in the eye of the beholder. Thus we should look at the development of Libya’s motivations for acquiring weapons of mass destruction, and for giving them up in the end, in order to understand why the Libyan perspective eventually came to coincide with that of ‘most observers’.

**Why did Libya wish to acquire weapons of mass destruction?**

In order to fully understand why Libya came to renounce its WMD, we must ask why the leadership wanted them in the first place. There is no easy answer to this question, as Libya does not seem to have fitted the common schemes of a proliferator. It had no serious security problem, since none of its neighbours was eager to swallow the oil-rich desert state, and initially there was no direct confrontation with any big power.

Libya could not possibly hope to become a great world power (unlike the case of such nuclear states as the Soviet Union, China, North Korea or Pakistan), given the low size of its population and gross national product, even with the good fortune of having a lot of crude oil. It was also not truly isolated (as South Africa, Israel or North Korea), but was reassuringly embedded in the Arab League. Nor was there any strong military-industrial or technocrat bureaucracy pressing the case for WMD programmes (as in France or India). Quite the contrary: Libya’s programmes were much more a top–down than a bottom–up affair. What, then, were the factors driving Libya’s WMD programmes – its nuclear programme in particular?

Coming to power, the young officers were in a revolutionary mood and would remain so for about two decades. The distribution of power and wealth in the world was seen as unjust and humiliating for the South, a view quite widespread in the Third World during the heyday of UNCTAD and notions of a New World Economic Order. Libya was among the first countries to press for higher oil prices, and also to nationalize its oil industry. Both steps were meant as moves to strengthen the hand of the poor, suppressed South and to try to provide some counter-balance to the overwhelming superiority of the West. Besides, they also helped to channel considerable resources into the hands of the country’s new rulers.

Libya’s close relations with the Soviet Union served the same purposes: balancing Western power, and ensuring access to modern, powerful weaponry not available from Western sources. Very quickly, the Soviets and their allies became the main arms supplier, fuelling the large stocks of advanced weaponry in the Libyan armed forces – which, however, never managed to integrate these acquisitions into a capable and effective posture. This experience might have helped to fuel Gaddafi’s interest in WMD. In the perspective of a underdog–topdog confrontation, weapons of mass destruction, as a universal equalizer, can have an undeniable appeal quite independent from their military utility in any foreseeable conflict scenario. This appeal was certainly all the stronger as Gaddafi felt that, among the underprivileged and humiliated,
Muslims – and Arabs in particular – were probably worst off. Thorough distrust and resentment of the imperial West ran deep through the thinking of the Colonel and his followers (Burgat 1995: 49).

Gaddafi and his group were devoted to the Arab cause. Their hostility towards Israel was truly antagonistic. Moreover, it was already clear that Israel had become an undeclared nuclear-weapon state. In order to match Israeli power, after Egypt had withdrawn the best conventional Arab army from the competition, some Arab counterweight must have appeared essential to the Libyan leadership. The urgency, it can be assumed, became even more acute after Israel had bombed the Osirak reactor in Iraq, thereby making sure that the major power within the rejection front would not be able to get even with the Israelis.

The post-Camp David and Osirak periods coincided with the initial period of determined Libyan WMD ambitions. It can help to explain the rooting of these ambitions in Libya’s desire to assume Arab leadership in the Middle East conflict, bolstered by a robust deterrent. Due to Libya’s own aggressive actions towards its neighbours – Egypt, Sudan, Tunisia, Morocco and Chad (El-Kikhia 1997: 107–23; Cordesman 2002b: 190–3) – a very hostile regional environment had been constructed; given the proven lack of professionalism of the Libyan military, there was a serious security problem. Anthony Cordesman (2002b: 206–32) has shown in detail, the significant acquisition of good-quality military hardware in huge numbers did not help the Libyan leadership to field an effective force. Neither its army nor air force nor navy was really capable of integrating these quantities of high-tech weapons into their tactics and operations, or training their soldiers to use them effectively, or maintaining them in an appropriate status. Suffice it to note that Cordesman reports that 50 per cent of Libya’s 2,030 main battle tanks, its military aircraft, its submarine fleet and its ten major surface naval combatants were non-operational; he concludes by terming the arsenal ‘the world’s largest military parking lot’.

The confrontational stance towards Israel and the revolutionary mindset of Gaddafi made terrorists of various brands appear as natural allies. In turn, this support for terrorists (from the radical groups in Palestine to the IRA) brought about a continuous deterioration in US–Libyan relations. The United States had viewed the young officers’ coup with some concern; the ensuing close relations between Libya and the Soviet Union did not please Washington either, although Libya became never as close a client of Moscow as, say, Syria, since Gaddafi detested communism and its atheism (El-Kikhia 1997: 128–37). But these nuances frequently got lost – as they still do – in the US capital, where the friend–adversary dividing line tends to dominate without great differentiation. The speeding-up of support for terrorism after the rejection front was installed further alienated Washington, putting Libya on the short list of America’s enemies – although the central focus of US security concerns remained, of course, the Soviet Union.

This downward spiral in the relationship culminated in the early and mid-1980s with a direct confrontation that pitted helpless Libyan air defences against an overpowering US Air Force and Navy – another example of good hardware
not being operated in a cutting-edge style. By then, largely due to its own actions, Libya found itself in a confrontation with a nuclear-armed superpower that held Tripoli in rather poor regard: a 1981 CIA study cited Libya as ‘the most prominent state sponsor of and participant in international terrorism’ (Stanik 2003: 38).

The nuclear-tipped cruise missiles deployed in Comiso, Sicily, were not interpreted as NATO assets in the East–West conflict but as a direct threat to Libya by a US administration – under Ronald Reagan – that was set on ousting Muammar Gaddafi (Cremasco 1987: 274–5). For at least six years US policy focused on Gaddafi and the ‘Libyan threat’ – including support to domestic and exiled opponents who sought to get rid of him, training his Chadian adversaries and hard military confrontation, at times aimed at provoking him into responses that could serve as a pretext for larger-scale military action with the hoped-for objective of regime change (Stanik 2003).

If a ‘realist’ national security motivation for WMD was largely missing before, now it could easily be found. In this situation, Libya might have thought that possession of WMD, and the further development of more sophisticated ones, could buy not only the influence it longed for, but also existential security against a vastly superior enemy as well as its regional sidekick, the equally formidable and redoubtable Israel with an air force unmatched anywhere in the region. Moreover, the Libyan leadership could not fail to note that the Soviets were not supportive of Libyan interests when the United States attacked, and did not even warn Tripoli of the impending attack (El-Kikhia 1997: 135).

Over-ambition and a self-chosen role in the Middle East conflict supplied Libya’s initial motivation for considering going nuclear in the early phase. The lost hope in conventional proficiency in the face of a growing confrontation with the United States added reasons to stick to and seek new ways to accelerate the nuclear programme in the second phase. An ideology-induced ambition was reinforced by a hard-core security problem. Lacking anything approaching a reasonably capable conventional defence capability (as proven not least in Chad) and with the shock experience of a largely useless air defence against a small part of the US Air Force and naval air power (Cordesman 2002b: 229–30), what else might provide national security than a WMD-based deterrent?

However, it is harder to fathom what drove the Libyan leadership to continue with, and even accelerate, its nuclear-weapons programme in the 1990s, when the fundamental decision to seek better relations with the West and to conduct a seminal retreat from revolutionary and confrontational policies appears to have been taken; the indication came with the beginning of the protracted negotiations on Lockerbie in the early to mid-1990s. I return to this question in discussing the reasons that compelled Libya to finally give up all WMD. Here I focus on possible developments that might have served as a driver, even while attempts at reconciliation were under way.

According to Libyan sources, the nuclear-weapon programme was accelerated in 1995 (IAEA 2004a: 5). This decision coincided roughly with the coming to power of Prime Minister Netanyahu in Israel and a concomitant abrupt
change in Israeli policies towards the peace process. This reversal of events in the Middle East may have served as a stimulus for Gaddafi to continue with the nuclear-weapon programme, and even to push it forward.

This appears to be confirmed by the statement made by Saif Al-Islam Gaddafi, the heir apparent, that Libya had developed WMD as a hedge against Israel (Kerr 2004b). It is doubtful, however, that Middle East considerations motivated the original start of the programme, as the Libyan December 2003 statement suggested (Center for Nonproliferation Studies 2005). Acquisition of the conversion plant had been pursued from 1981 onwards – the year when the resolution on a nuclear weapon-free zone was first adopted unanimously in the General Assembly, surely a bad time to start going nuclear. It seems more plausible that the worsening of the security situation and the clash with the Reagan administration might have been the dominant driving forces.

It might also be speculated that the emerging talk in the United States on ‘rogue states’ which started during the Clinton administration and in which context Libya was regularly mentioned (Klare 1995; Litwak 2000) played its role in the decision to push the nuclear envelope. Together with the dismal and fragile state of Iraq and its political leadership under the auspices of UNSC Resolution 617, uncertainty about the future course of US policy might have nudged Libya to seek an existential deterrence posture, for the eventuality of Washington deciding to turn against it.

The dictum of former Indian chief of staff General Sundarij ‘Make sure you have your own atomic bomb before you challenge the United States’ (quoted in Perkovich et al. 2005: 136) may well have reverberated in Tripoli. This coincidence of political-security factors while the cooperative aspect – the negotiations – had not made any decisive progress could well have motivated a policy of active ‘hedging’: and that, logically, meant pursuing the nuclear option.

There was apparently another attempt at acceleration in 2001. Two explanations are possible. First, the failure of the Barak–Arafat negotiations at Camp David, and the election of Prime Minister Sharon with his unmatched reputation as a tough hawk could have served as a stimulus in the same way as Netanyahu’s election had influenced Libyan perspectives in 1995. This would confirm the earlier hypothesis that Libya’s nuclear ambition and its chosen role as a radical stalwart of the Arab–Palestinian cause correlate with each other. Incidentally, it could also shed an interesting light on what renouncing nuclear weapons might mean to the future of Libyan–Israeli relations, although it is still probably too early to pursue this intriguing speculation any further.

Second, the election of President Bush created new uncertainties for the Libyan leadership. From Tripoli, it did not go unnoticed that Bush appointed to important positions in his government quite a few officials who had been around when US–Libyan relations were at their worst in the mid-1980s. Additionally, the ideas about rogue states and forced regime change expressed by these officials before and after taking power might have heightened anxieties and security concerns in Tripoli. These anxieties may even have arisen after an early (2001) approach by the Libyan intelligence service to get the topic of WMD on the
agenda of the British–US–Libyan talks was rebutted by the United States on the grounds that the Lockerbie case had first to be closed. The Libyans may have understandably thought that offering talks on this subject would be welcomed by their discussion partners who in public were so keen about rogue states with WMD. The – probably surprising – rebuttal may thus have fed worst-case analyses of what the Americans were up to.

From this perspective, pursuing a determined hedging policy in case things should turn really bad looks quite rational. The Libyans might have thought that they would be in a position to give up this policy once things took a turn for the better – as indeed they did. Pursuing the nuclear route also meant that a real bargaining chip was in Libyan hands in case it was needed in the negotiations. These anxieties were not to subside until after it turned out – in the course of the Lockerbie settlement – that it might be possible for Libya to strike a deal with this grim US government.

**Why did Libya give up its weapons of mass destruction?**

In order to cut through the many speculations about the reasons and motivations that led Libya to abandon its WMD programmes, the best start is probably with the official statement by the Libyan authorities which announced the decision (see Acronym Institute 2004). This approach may help to counter criticisms that Libyan leaders might have been seeking to conceal their true motivations, engaging in ‘rhetorical action’ so as to create a positive image among their new cooperation partners in the West.

On the other hand, if we also bear in mind that the WMD programmes played a significant role in light of Libya’s previously chosen identity, notably with regard to the Middle East, we must also realize that what the leadership utters will be critically scrutinized by those whose support is necessary to maintain the existing power structure in that country. Any arguments brought forward to justify the surprise dropping of WMD plans must be designed to resonate not only with the international community, but also with the internal community – the one that counts for regime stability and leadership support. In this political sense, public utterances are an indicative guide for what counts as good reasons in the inner circles of the Libyan leadership.

**Trust-building**

The first essential information given is that the conclusion of the Lockerbie agreement with Britain and the United States convinced Libya that there was not a secret agenda, but rather ‘good intentions’ on the part of these two Western powers, so far seen as a main threat to Libyan security, towards the Mahgreb country. The first condition for Libya to give up what was probably meant to be a deterrent against forceful regime change, thus, was apparently the reassurance that created confidence that national security could be obtained through cooperation rather than defiance and confrontation.
British Foreign Secretary Jack Straw would seem to have confirmed this factor, by putting the Libyan decision in a long-term process of incremental confidence-building between Britain and Libya. Steps included extraditing the two Lockerbie suspects that had been members of British intelligence, followed by the lifting of UN sanctions and the restoration of diplomatic relations with Libya in 1999. A further step was the visit of an FCO Under-secretary to Gaddafi in 2002; talks started on a cultural and a transport agreement, concluded in 2003. Straw strongly emphasized the building of mutual confidence over the extended period of five to seven years (Straw 2004b) – to which the preceding discussion on solving the Lockerbie case must probably be added.

Second, the statement emphasizes the close communication between the British Prime Minister and Gaddafi. It appears that the Americans took the back seat, at least at the higher level of negotiations. Given the almost paranoid enemy image the United States enjoys in most of the Arab world (Libya not least), this personal engagement by Tony Blair may have been indispensable for maintaining Libyan confidence throughout the process.

These two aspects appear to put into doubt the assumption voiced by US neo-conservatives that the marshalling of military power against Saddam Hussein had a healthy effect on Colonel Gaddafi. This assumption is unconvincing in any case, in light of the historical record. When US military power and intelligence operations were directly focused on the Libyan leader during the Reagan era, he did not yield but defiantly continued to support terrorism (albeit in a more concealed way) (Stanik 2003); he also started his WMD programmes at that time. Why should Gaddafi now react quite differently to a much less threatening pressure directed not against himself, but against another dictator? The only voice to issue veiled threats in 2003 was that of John Bolton, and he was, as mentioned, sidelined while the talks between Libya and its British and US interlocutors went on in earnest (Salama 2004).

**Timing of the reversal: debunking some myths**

The third and probably most remarkable aspect of the statement is that the negotiations were completed three months before the official announcement of their results in December 2003. That would contradict one of the reasons most frequently given by US government sources, namely that the breakthrough came only after the interception of the BBC China – a German-owned ship carrying thousands of centrifuges to Libya, which was prevented from reaching its destination through efficient cooperation involving Germany, Italy, Egypt and British and US intelligence.

The intercept took place on 4 October, but according to the Libyan statement, everything had been decided by mid-September. In fact, already in August that year, Gaddafi had announced his willingness to admit foreign inspectors. By late September, Libya had extended this invitation to US and UK inspectors at its weapons sites. These visits started in October; another round, lasting several weeks, took place in December, just before the announcement. The Libyan
indication that the official statement was made public three months after the agreement in principle is thus plausible (Johnson 2004a). The reason for the delay, the statement said, lay in misgivings over the situation in Iraq; Gaddafi did not want to be too positively associated with the United States and the United Kingdom. Nor is this implausible, given Libya’s claim for a significant role in the region, and the connection – discussed above – of its WMD programmes with that role.

According to former US Senator Gary Hart, the first approach in that direction was made as early as 1992 (Jentleson and Whytock 2005/06: 65). At this time, the General People’s Congress had also, in an official resolution, endorsed the handing over of the Lockerbie suspects to a ‘fair and just’ tribunal (Hart 2004; Viorst 1999: 3). A second offer was made in 1999 (Indyk and Walker 2004; Indyk 2004), and again in October 2001 by intelligence chief Musa Kusa (St John 2004: 394; Shoham 2004). In each case, the suggestions from Tripoli were rebuffed on the grounds that the Lockerbie case and the murder of London policewoman Fletcher by a staff member of the Libyan embassy had to be laid to rest first (which also casts an interesting light on British and US priorities compared to their stringent rogue state/WMD rhetoric) (St John 2004).

One year later, in December 2002, Libya subscribed to the Hague Code of Conduct on Missile Proliferation, another intentional signal of readiness to change its stance on armaments (Kerr 2004a). From this chronology, one thing appears clear: if there had been continued Libyan willingness from the early 1990s and onwards to negotiate WMD away in return for appropriate concessions, the pressure on Saddam Hussein in spring 2003 or, even more unlikely, the capture of Saddam Hussein in December 2003 could certainly not have been the decisive factor, as US neo-conservative folklore would have it (cf Salama 2004).

The security factor

In an additional explanation of his government’s move, Libyan Foreign Minister Shalgam stated that Libya had concluded that WMD did not serve his country’s security, and that an arms race was detrimental to Libyan interests as well as to regional stability (Straw 2004a). The same point was generalized later by Gaddafi himself during an African Union meeting: countries should give up WMD; nuclear weapons make states less secure (Arms Control Association 2005). Given the state of Libya’s nuclear-weapon programme, it would have taken another few years before any results could be achieved. There would have been the constant risk of a strike against the facilities and storage areas, not only by the United States but also by Israel. Even a small Libyan nuclear arsenal would probably have been vulnerable, and its air defences would clearly have been incapable of providing sanctuary for the deterrent.

Under these circumstances, the Libyan leadership might have come to the conclusion that its own security and survival would be far better served by following a more cautious line in foreign policy; further, once such a line was
taken, that WMD were completely unnecessary for the country’s security – no one would have good reasons to challenge it, and the only superpower might be on Libya’s side rather than threatening it.

Mending fences with the United States received a push from a newly discovered common security interest: both countries were faced with the threat emerging from Islamist terrorism. Gaddafi’s ideology, as noted above, involved a special amalgam of socialism, nationalism and Islam, moreover, his brand of Islam is fairly unorthodox, for example in the support for women, including the creation of a military academy for female officers (Mayer 1995; Joffé 1995). Libya had faced several serious Islamist attempts against the state since 1995; significantly, Tripoli had issued the first Interpol warrant against Osama bin Laden and associates as early as 1998.

Thus, when George W. Bush told the world after 11 September, ‘You are either for us or against us,’ the Libyan leaders, perhaps to their own surprise, may well have noted that this time they might not necessarily end up in the ‘against’ camp. Indeed, Gaddafi was the first Arab leader to react immediately, condemning the attacks and expressing solidarity with the victims (St John 2004: 393–4). This was a clear expression of pro-US sympathies that indicated the fundamental shift of policy under way in Tripoli.

This positive feeling was certainly reinforced by the lack of mention of Libya as member of the ‘Axis of Evil’ in Bush’s (in)famous State of the Union address in January 2002. By that time, Libya had made another offer – in 2001 – to the Bush administration on WMD, but without success. The final Lockerbie talks were, however, still under way. All the same, Libya was to find itself named as a potential enemy of the United States together with Iran, Iraq, North Korea and Syria in the US 2002 Nuclear Posture Review, and singled out for vastly exaggerated accusations of WMD possession and programmes by Under-secretary of State John Bolton in 2002 and 2003. Bolton, Secretary of Defense Rumsfeld and other hard-liners had no wish to relinquish the objective of regime change.5

This means that Tripoli had received mixed signals from Washington and thus felt compelled to continue with its bifurcated policy, determinedly pushing ahead with its WMD programmes while at the same time engaging seriously in the Lockerbie settlement talks. In fact, the last phase of bargaining that delayed the public announcement of the agreement was caused by Gaddafi’s insistence on a guarantee against US regime-change policy (Jentleson and Whytock 2005/06: 74).

All these factors together, however, represent little more than an enabling structure in which the motivations to give up these weapons – or the option to build them – could prevail over the deep-rooted instincts that had led to their procurement in the first place. In order to understand the most probable positive motive, we need to take a more in-depth look at the predicament of the Libyan leadership.
The deep causes: the political economy of Libya’s WMD renunciation

Libya is a distributive or rentier state (Vandewalle 1998: chs 1, 2). It derives its income not from a thriving, modern, integrated economy from which the state apparatus can extract tax revenues, but exclusively from the extra rent which accrues from foreign sales of a primary-sector commodity, crude oil (and, to a lesser degree, from natural gas and refined oil products). The main mission of the state, then, is to redistribute this external income in order to optimize its own stability. The sites of power, the military, the police and the intelligence services, were provided with lavish budgets. A large state sector created employment for scores of loyal supporters. Medical care, education, pensions, rent, utilities, oil and food were heavily subsidized to keep people happy. From the ruler’s perspective, the up side is that he does not need to bargain with resource-holders over their taxes and to make concessions as to their participation in decision-making: ‘No representation without taxation’.

From the beginning of his rule, Colonel Gaddafi strove to overcome the rent-based economic structure, even though distributing rent was the basis of his rule. First he tried socialism, with large-scale nationalization of all enterprises and the creation of the ASU. In the mid-1970s, concerned that the party bureaucracy might emerge as a second, rival centre of power, he installed the People’s Committee system. Then, fearing the development of power centres, Gaddafi instigated a type of cultural revolution, with Revolutionary Committees overseeing the People’s Congresses and Committees, purging them, bringing deviators and dissidents to ‘justice’, and so on.

As a consequence of this ‘permanent revolution’, technocrats and bureaucrats, confronted with the possibility of (risky) change at any minute, had to look for the quick gain that might help them to weather harder times. All Libyans, whatever their social position might be, were forced to attach themselves to the more stable elements of society, family and the tribe. In other words, the lack of stability in the political sphere, with unending creation and destruction, and the prevention of the emergence of a competent (and correspondingly strong and demanding) administrative and technocratic bureaucracy, created a counter-incentive structure that worked against the very transformation to a modern post-rentier economy and society that Gaddafi, in theory, would have liked to see emerging.

This ‘regression’ proved fatal for the next turn in policy: in the mid-1980s the Libyan leadership turned suddenly to economic liberalization in an attempt to cope with the consequences of declining oil income. But now the Libyan state, focusing on distribution and not on institution-building around taxation, simply lacked the skilled institutions that could manage the complex regulatory and management tasks of a liberalizing political economy (Vandewalle 1998: 28–9, 35–6). In consequence, liberalization failed completely. The heroic attempt to overcome the rentier state status had not succeeded. If the regime wanted to maintain power, measures would have to be taken to ensure an uninterrupted flow of rent (Vandewalle 1998: ch. 6).
In the early 1990s, Libya’s situation was desperate, despite the continuous oil income. Attempts to transform the economy through large-scale complexes like the ‘Great Man-made River’ – a vast project to build an artificial underground aquifer to transport subterranean water from fossil reservoirs below the Sahara to the densely populated Libyan coast – through radical socialism and through liberalization had failed. The oil income so far had been wasted, and was falling (El-Kikhia 1997: ch. 4). The political system had managed to prevent the emergence of power centres other than Gaddafi and his circle – but it had not be able to create stability and to prevent resentment. One indicator of the gravity of the situation can be found in Gaddafi’s increasing reliance on people from his own tribe for his security (El-Kikhia 1997: 89–92). Without a reliable flow of oil rent, regime maintenance could not be guaranteed.

Consequently, the Libyan leadership began to change its resource-devouring foreign policy. During the late 1980s, Gaddafi started cutting down on his adventures directed towards Arab and African neighbours, shifting to a ‘good neighbour’ policy, possibly to save resources that had previously gone into the conflicts with these states – the most costly and devastating of which had been the Chad intervention, which ended in the clear defeat of the Libyan forces. That Libya agreed to accept the ICJ ruling that confirmed Chad’s claim to the contested Aouzou Strip was a highly convincing sign of a change in policy (Simmons 2003: 73–8). While a good neighbour policy was certainly useful and in the Libyan interest, it could not compensate for the general decline in oil income and the impossibility of compensating for it – because of the increasingly strict Western sanctions policy.

By the early 1990s, Gaddafi had played all his cards but one: mending fences with the West, and the United States in particular. He had learned that the only way to preserve his system of rule was to keep Libya a rentier state. The interest in maintaining power had become all the more urgent as Gaddafi was poised to leave a heritage, most likely to his own progeny; his sons, in turn – notably the Western-educated and diplomatically versed Seif el-Islam – might have exerted some influence on him to change course (Ibrahim 2003; Claude 2004). After all, to ensure the stabilization of their prospective inheritance, the oil rent must be secured.

The oil boom does not necessarily help with this goal, which is more long-term: to fully exploit its possibilities and to keep the Libyan oil income sustainable, exploration must rise, and production and refinery equipment must be fundamentally overhauled and replaced. This would require good relations with the United States. To begin with, if Libya were to re-enter the world economy, the sanctions would have to be lifted, and this could happen only with US consent. Second, the Libyan economy needed the expert technological input available from US companies. It also needed the US market, as well as to be free of the lingering risks that all Libyan assets abroad might be confiscated under US pressure. In fact, Libya tried half a dozen channels in hopes of opening contacts with the United States (Cortwright and Lopez 2005; Viorst 1999: 71–3).

For several reasons, Libya could not succeed in this policy shift overnight –
although the 1992 offer to talk WMD issues and to solve Lockerbie, both plausible in terms of timing because they coincided with the final recognition that economic reform had failed to produce results, would indicate insight into realities much earlier than generally thought. Some observers sensed the change of direction very early on and even spoke about a ‘Libyan perestroika’ (Deeb 1990; see also Vandewalle 1991).

But Libya had logical reasons to go slow. For one thing, Gaddafi must have been deeply distrustful of US intentions. Indeed, he feared that the trial of the two accused Libyan agents might be used as a pretext – once they were sentenced – to justify a regime-change attack against him (El-Kikhia 1997: 142–3). The ‘rogue state’ debate in the Clinton administration certainly did little to allay such fears. It took the long and protracted Lockerbie negotiations for the Libyans to arrive, as noted above, at the conclusion that it would be possible to strike a fair deal with the other side.

Second, the reluctance on the part of the United States and the United Kingdom to take up the Libyan offers must have reinforced fears that the two mighty powers were not sincere towards that country. Gaddafi’s weapons of mass destruction figured in any US threat analysis. And yet, when the readiness was expressed to talk about these weapons, the reply was negative: such matters could be discussed only when the Lockerbie case had been solved satisfactorily. For the Libyan leadership, not aware of the enormous public pressure which the families of the deceased had been exerting via the media, this stance must have been totally incomprehensible – another sign of Western duplicity.

Third, there was the domestic dimension. For the better part of his career, Gaddafi’s domestic legitimacy rested on his staunch anti-colonial, anti-Western, anti-American and Arab-unity position. All this would have to be scrapped for good if a deal with Washington were to be struck. Such a shift of gear takes time, however strong a leader may be in his country. The uncertainty as to how the followers – even prominent ones – will react to such a redirection not only of policy, but of basic principles, makes it advisable to undertake thorough explorations of these reactions, before decisive steps are taken.

It is interesting to see how Libya refocused its policy, from Arabism to an enhanced role in Africa. This could easily be justified by the lack of Arab solidarity with poor, sanctioned Libya (Anderson 1995: 232; El-Kikhia 1997: 143), and permitted the leadership to tone down its former flamboyant rhetoric on the Middle East, without completely abandoning its anti-Israeli stance. Eventually, Libya became eager to describe its own step for disarmament as a step towards a Middle Eastern zone free of weapons of mass destruction, and to have this view adopted by the IAEA Board of Governors and the UN Security Council (UNSC Press Release SC/8069, NPT Review Conference 2000b).

The protracted character of the negotiations and the change in positions are thus fairly plausible. And it is understandable that even expert observers of the country failed to identify a decisive shift in its foreign policy orientation. Libya’s statement at the 1995 Review Conference, for example, while recognizing at least some disarmament progress through the INF and START Treaties,
was a biting criticism of Israel’s nuclear capability and US policy; it castigated the United States for false accusations against Libya and alleged attempts to keep the Arab world disarmed up to a denial ‘of the right even to possess knives and stones, and deceive us into accepting a peace similar to that between the wolf and the lamb’; consequently, Libya refused to extend the NPT as long as Israel was permitted to stay outside, although it eventually gave in to the majority (Azwai and Mohamed 1995).7

In the second half of the 1990s, Gaddafi was still voicing demands for Arab WMD to counter Israel’s nuclear capability (Cordesman 2002b: 241). The way in either direction was deliberately kept open, and Libya reminded the world that it might still choose the less desired course of action. In the end, Colonel Gaddafi and his collaborators opted for de-proliferation, because this shift offered their only reliable hope for regime maintenance. That this deal was struck with a US administration that had carried the banner of regime change into a war against another Arab dictator can only be seen as a deep historical irony.

From the above, we realize that the failure and success of US/UK strategy towards Libya cannot be ascribed to ‘wrong’ and ‘right’ sanction strategies applied against it (Jentleson and Whytock 2005/06). I would also argue that changed security perceptions relating to the value of nuclear weapons were not the main driver of Tripoli’s policy shift (Bowen 2006). Rather, it was path-dependent on the experiences of the Libyan leadership with its internal experiments in economic policy and its external policies; it was equally path-dependent on the gradual building of trust and confidence in the sincerity of the Western negotiation partners.

**Conclusion**

In his statement during the general debate of the NPT Review in 2005, the Libyan ambassador delivered a standard non-aligned overview. Then came the remarkable deviation: an account of the steps taken by Libya to fulfil its promises to get rid of all weapons of mass destruction. The Libyan representative praised his country’s actions as a shining example for others, and called for the full implementation of all stipulations of the Treaty (Own 2005). One extraordinary political journey in the WMD sphere had come to an end.

The termination of Libya’s WMD programmes is without doubt one of the most remarkable and praiseworthy successes of non-proliferation policy so far. That the laurels for this successful diplomatic effort go to the United States and the United Kingdom – the two states that have created, without any good reason, the Iraqi mess – is another irony of history, but it does not detract from the merits of the Libyan example.

Is there anything to be generalized from the case of Libya? Here we must bear in mind that careful, unprejudiced exploration was the necessary prerequisite for proceeding with this examination. One might ask whether the WMD issue could have been picked up earlier, in parallel rather than sequentially with
regard to the Lockerbie case, but surely this is less relevant today, since the horse is now safely in the barn. Second, we note the deliberate and targeted building of confidence in a relationship that was characterized by deep distrust at the outset. Third, there was the offer of attractive carrots, both economic and political – including security. Without these positive incentives, the Libyan leadership would certainly not have moved.

The effectiveness of the sanction regime should not be underrated. The United States and the United Kingdom probably played hardball too long, in hopes that the sanctions would bring about the fall of the unloved Libyan leader. But when the sanctions regime threatened to crumble in the second half of the 1990s, with African states violating its terms and some European countries eager to re-establish full economic relations, London and Washington finally moved, with considerable diplomatic skill, to achieve a successful conclusion – even without regime change.

Whether all these experiences could be transferred to another case is quite a different question. The Libyan regime was highly vulnerable because of its inability to overcome the structure of a rentier state and its complete dependence on precisely that structure for upholding its own system of rule. Since the oil rent proved dependent on outside forces, with Washington pulling the strings, Libya had scant choice, having tried all the other options with no success.

Other ‘rogues’ live on different conditions. North Korea, for one, may be a rogue state, but it is definitely not a rentier state. For Iran, the oil sector is certainly pivotal, but the country has a much broader societal structure than Libya. It is thus necessary to look into the specifics of every single case rather than to assume that the Libyan size fits all. It simply does not.

Libya’s policy shifted decisively without regime change (Lewis 2002). And a final irony of the case might be that the most regime-change-inclined US government agreed with one of the most often cited ‘rogues’ on a deal that was his only chance of preserving a regime with a deplorable human rights record – for example, even though Amnesty International was given access to Libya. This is not meant as a criticism of the Bush administration’s decision to strike the deal: what could be criticized are its petty attempts to present the Libyan case as the success of the overall US counter-proliferation strategy (e.g. deSutter 2004) rather than a prudent, pragmatic deviation from it.

No, the Bush administration did the right thing this time. But this exposes the dilemmas inherent in striking a balance between the desire to change the internal conditions of non-democratic states and the imperative of enhancing world security. Simple formulas will not do. It is to the credit of the Bush administration that it finally understood this prescription – at least in the case of Libya.

Notes

To Heidrun Zinecker and Jonas Wolff, who have reawakened my knowledge about international political economy and thereby helped me understand the intricacies of the Libyan case.
In the following, the term ‘weapons of mass destruction’ (WMD) is used, although I am aware that it is something of a misnomer, lumping together chemical, biological and nuclear weapons which are grossly different in nature and effect.


Supposed by Cortright and Lopez 2005 and alleged by John Bolton, cf. Kerr 2004c; it might be assumed that Bolton wanted to make a pitch for his baby, the Proliferation Security Initiative.

St John 2004: 397; Shoham 2004. This timing also explodes another US myth, that Gaddafi was turned around by the capture of Saddam Hussein in December 2004. Apart from all other indications, this is utterly implausible – how could all the details of the agreement which was announced on 19 December have been negotiated in such a brief time?

St John 2004: 394–5; Bolton might have relied once more on exaggerated intelligence reports concerning the advancement of Libya’s WMD programmes, cf. Kerr 2005; see also Jentleson and Whytock 2005/06: 72–3.

See e.g. Faath and Mattes 2001.

Libya’s 2000 REVCON statement was average Arab/Nonaligned, with only small US-critical diatribes.
Iran’s uncertain nuclear ambitions

Sverre Lodgaard

Although Iran’s nuclear programme can be traced back to the 1950s, and a US-supplied research reactor went online at the Teheran Nuclear Research Center (TNRC) at the end of the 1960s, it was only after the oil crisis in 1973 that the Shah began to invest heavily in nuclear energy. In the following years, Iran concluded contracts with the United States (1974), Germany (1976) and France (1977) for the construction of power reactors and supply of fuel for them. It bought itself into the Eurodif gaseous diffusion enrichment plant in France and the Rossing uranium mine in Namibia, acquired yellowcake from South Africa and sent technicians abroad for training in nuclear sciences. The scientists at TNRC were given wide discretion regarding the nature and orientation of the nuclear research to be conducted. Spurred by the influx of oil revenues, the stated goal was to generate 23,000 MWe from nuclear power stations.

Under a contract with Siemens (Federal Republic of Germany), two light water reactors (LWRs) were to be built at the Persian Gulf city of Bushehr, each with a capacity of 1,200 MWe. They were due to be operational in 1980, but the construction works came to an abrupt halt with the revolution in 1979. Ayatollah Khomeini took no personal interest in nuclear matters, and many Iranian nuclear scientists left the country. Also, declining oil revenues and insufficient electrical infrastructure made the suppliers reluctant to proceed.

Did the Shah have in mind to develop a nuclear weapon capability under the umbrella of the NPT, wrapped in a civilian power programme? Iran signed the NPT in 1968 and ratified it in 1970, the year it entered into force.

The founder and head of the Atomic Energy Organization of Iran (AEOI) up to 1979, Akbar Etemad, says the Shah took no interest in military applications (Etemad 1987). Western intelligence agencies have not been convinced about that, however. Even if Etemad’s claim was correct for the Shah and his closest collaborators, this might not be the whole story. Iranian research teams may have pursued scientifically interesting avenues of relevance for weapons acquisition on their own initiative, especially since they were so generously funded and broadly mandated. This is well known from the nuclear programmes of other countries: with or without the knowledge of their political superiors, scientists have conducted activities of direct relevance for weapons production.

With the passage of time, and in relation to a regime that has been relegated
to history, evidence about nuclear-weapon ambitions could be expected to pop up. This has not happened. The secrecy surrounding such intentions makes it hard to prove them, especially since there is no need to make formal decisions about weapons objectives a long time in advance: preparations for the production of nuclear weapons can be made in reference to a variety of other purposes. As long as there is no need to pass any reference to weapons at any level of government, there may simply be no documents to leak.

Whatever the intent, what was done in the 1970s came to use later when Iran resumed a more vigorous nuclear programme in the mid-1980s. At Bushehr, one of the light water reactors is being rebuilt by Russia and scheduled to be operational in 2007. Enrichment contracts with foreign companies, first entered into in 1975, were followed up in the 1980s and 1990s. In response to an IAEA inquiry, Iran explained that a recent attempt to purchase hot cell manipulators and lead glass windows for reprocessing of spent fuel was based on design information provided by a foreign supplier in the 1970s (IAEA 2004d: 16). Generally, it can be assumed that the supplier network of the 1970s was helpful in starting the clandestine programme ten years later.

Ever since the NPT came into being, it has been acknowledged that states may come close to nuclear-weapon status while observing the provisions of the treaty and the associated safeguards agreements with the IAEA. Naturally, the revelation of eighteen years of concealed fuel-cycle activity, and of an underground supplier network nurtured from within a nuclear-weapon state (NWS), took the Iranian case to the top of the non-proliferation agenda.

Concealment

In the summer of 2002, the National Council of Resistance in Iran (NCRI) identified two previously unknown facilities: a uranium enrichment plant at Natanz and a heavy water production plant at Arak. Shortly thereafter, Iran announced that it was developing a nuclear power programme that relied solely on indigenous resources (Kerr 2002). This information triggered intensified IAEA inspections and hectic diplomatic activities to clarify the full scope of Iran’s nuclear programme.

In 1985, Iran made a decision to pursue enrichment technologies. In 1987, it acquired drawings of a P-1 centrifuge and samples of centrifuge components from the Qadeer Khan network. Centrifuge R&D testing began at TNRC in 1988 and continued at Kalaye Electric from 1995 on. Between 1994 and 1996, Iran received another set of drawings for the P-1 design along with components for 500 centrifuges. At about the same time, it also received design drawings for a P-2 centrifuge through the same network. The P-2 rotors are based on maraging steel and can work at twice the speed of P-1 rotors, which are made of aluminium. Hexafluoride was fed into a centrifuge at Kalaye Electric for the first time in 1999, and then into a cascade of nineteen centrifuges in 2002 (IAEA 2004d: 6).

It is the enrichment programme that raises the greatest proliferation concerns. Iran’s ability to produce weapons-grade plutonium is more distant. Up to 2003,
work on both tracks was kept secret, in violation of the safeguards agreement. As listed in the Director General’s report to the Board of Governors of November 2004 and summarized in his report of September 2005, Iran has failed over an extended period of time to report on important transactions and activities; to declare the existence of important facilities; to provide design information; and, on many occasions, to cooperate to facilitate the implementation of safeguards (IAEA 2005b). Between February and October 2003, as the IAEA began to track clandestine activities down, Iran took a number of steps to conceal the origin, source and extent of its enrichment programme and other nuclear activities (IAEA 2004d: 7).

Subsequent to a request by the Board of Governors of September 2003 for a ‘full declaration of all imported material and components relevant to the enrichment programme . . .’ (IAEA 2003b), Iran informed the Director General that a decision had been taken to provide the Agency with a full disclosure of Iran’s past and present nuclear activities. On 21 October 2003, it provided what it described as a full picture of its nuclear activities. In a number of respects, the new story was different from the story that had been conveyed to the IAEA the previous month. The reorientation was part of a deal brokered by Britain, France and Germany (EU3), in which Iran also agreed to a time-limited suspension of its uranium enrichment programme. The IAEA was asked to monitor the suspension.

It rarely happens that a government declares itself guilty – from one month to the other; in one wholesale admission – of having misled its national and international constituencies. However, secrecy no longer worked; attempts to mislead the Agency failed; and in the beginning of October 2003 the BBC China, shipping nuclear equipment from the Khan network to Libya, was intercepted. Then, it seemed obvious that the Khan network would be exposed, and other customers soon disclosed. There are, furthermore, many players on the nuclear issue in Iran: the shift came when the Foreign Ministry, on order from the presidency, took over the nuclear file from the AEOI, which had taken a bureaucratic interest in limiting the disclosures to the IAEA. The new lead players started a new phase of greatly improved cooperation with the IAEA and engagement with the EU.

Was the October decision a radical turn towards full and accurate information about the nuclear programme? Admitting the need for confidence-building in view of past practices, the Iranian government signed an Additional Protocol to the standard NPT safeguards agreement (INFCIRC 153), based on the model protocol outlined in INFCIRC 540, and undertook to act as if it was in force. Accordingly, it declared a number of nuclear-related activities that had not been under the Agency’s purview and gave the Agency expanded inspection rights. By the fall of 2004, all declared nuclear material had been accounted for. To date, nothing has been diverted to prohibited activities. However, the Agency is not in a position to conclude that there are no undeclared nuclear materials and activities in Iran. In February 2006, when the IAEA Board reported its September 2005 finding of Iran’s past non-compliance with its NPT safeguards
agreement to the UN Security Council, Iran terminated its voluntary implementation of the Additional Protocol and ceased to offer transparency beyond its legal obligations, in protest. Since then, the Agency has been implementing Iran’s NPT safeguards agreement without problems, but Iran has not been forthcoming in assisting the Agency on the remaining outstanding issues (IAEA 2006d).9

The Additional Protocol was developed in response to the Agency’s failure to detect the clandestine programme in Iraq in the 1980s. By casting the net beyond nuclear materials to also include activities related to such materials, and by providing stronger inspection rights, the Protocol gives the Agency a better chance to detect undeclared projects. It has scored some successes already, inter alia by making the nuclear history of South Korea more transparent.10 Iran is a more demanding case, however. Even under normal circumstances, determining whether everything has been declared is a time-consuming process; it took five years in Japan and three and a half years in Canada. In view of Iran’s past pattern of concealment, making a full and accurate account of its nuclear history is particularly demanding.

What is the proper approach to the Iranian challenge? Governments answer this question differently because there is no uniform understanding of what is going on in Iran, and because they pursue different objectives there.

Interpreting the Iranian challenge: four scenarios

Reliable information about the programme is first and foremost the data collected by the IAEA. The accuracy of information provided by national intelligence agencies, and of political statements made in reference to national intelligence, is hard to assess because of the secrecy of the collection process (Hersh 2005).11 So far, however, national intelligence has hardly added much to the information collected by the IAEA. No ‘smoking gun’ has been found.

The IAEA secretariat, under the powers granted to it by its member-states through the IAEA Statute and NPT safeguards agreements, provides conclusions based on the information available to the Agency. The conclusions are based on capabilities and do not speculate on a state’s ‘intentions’ – as intentions can change overnight and there is no objective way of ‘verifying’ intentions. The Agency examines Iran’s technological procurement efforts and does not engage in speculations about either Iranian motives or those of any other state. Governments, on the other hand, make assumptions about Iranian intentions as best they can when formulating their policies.

To get a better understanding of what the data mean, they should be interpreted in the light of various assumptions about the nature and objectives of the Iranian programme. Four scenarios may be of particular interest:
Iran is building a comprehensive indigenous programme for peaceful utilization of nuclear energy

Very much of what we know – about the uranium cycle in particular – is internally consistent and in conformity with such a reading. Some critical questions remain unresolved, however. One of them concerns the need for a natural uranium/heavy water reactor of the size now being built at Arak (40 MWt). This is the same kind of reactor that India used to make plutonium for its first nuclear explosion in 1974,12 and that Israel acquired in the early 1960s.13 To produce isotopes for medical and agricultural uses, a smaller reactor would arguably do.

Another question concerns the economics of the programme. For a country so richly endowed with oil and gas to go for nuclear energy was not seen as a commercially viable proposition. Not until recently: on the basis of today’s petroleum prices, and the likelihood that prices will stay high or become even higher in the future, the calculations look much different. Also, nuclear power has become more economical because the safety improvements after Chernobyl produced spin-offs in terms of lower operating costs.14 Sceptics emphasize, however, that the 2006 sharp increases in petroleum prices could not have been foreseen at the time major decisions about the Iranian nuclear programme were made.

Third, the nuclear programme is a matter of technological pride. Persian civilization should be able to master the whole range of nuclear technologies, across the entire fuel cycle. It is a question of technological prowess and prestige – of being seen as a leading state in the Middle East also in this respect. While the weapons option is denied, there appears to be near unanimous support for the nuclear projects as a technological prestige programme.

Fourth, while Iran underlines the importance of self-sufficiency and therefore insists on building complete indigenous fuel cycles, its uranium deposits appear too small to sustain a power programme of the projected size (7,000 MWe). However, the uranium market has been a buyers’ market for a long time, so self-sufficiency in most if not all other respects would go a long way towards real energy independence. India, Japan and others also have limited uranium resources but ambitious nuclear power plans and extensive fuel-cycle programmes. Today, all major powers are competing for oil and gas worldwide. At the beginning of this century, and for a long time ahead, geopolitics is first of all about energy supplies and energy security. For Iran, the combination of oil, gas and nuclear power can secure high export incomes as well as a high degree of energy independence.

Finally, why such an effort to conceal the programme in violation of international commitments? Iran says concealment was necessary because an open programme would have run into US sanctions, and because there was a presumption of technology denial in formulations agreed by the Nuclear Suppliers Group (NSG) in 1995, known as the ‘non-proliferation principle’ or the ‘Iran clause’.15 In view of the adversarial relationship between the United States and Iran since the days of the hostage crisis, this would very likely have been the
case. When Iran decided to pursue the uranium enrichment route, the war with Iraq was still going on, and the United States and other Western powers supported Iraq. However, this does not necessarily explain Iranian motives at the time. The United States, European states and others assert that Iran’s extensive concealment left a confidence deficit that can only be removed by elimination of all fuel-cycle elements.

2 Iran went for nuclear weapons under the umbrella of the NPT, and tries to keep the programme on course as best it can

As indicated above, this approach may not have been alien to some of the Shah’s men either. NPT membership and IAEA safeguards shed legitimacy on Iran as a non-nuclear-weapon state (NNWS), in lieu of which a secret programme could materialize – much the way Iraq pursued nuclear weapons in the 1980s following the Israeli bombing of Osirak in 1981 (Albright and Hamza 1998). Iraq was a member of the NPT, and a safeguards agreement was in force.

The clandestine programme went uninterrupted until 2002, when the NCRI triggered a crack in the secrecy. When the IAEA followed up, Iran took evasive action for most of 2003, but turned around to cooperate much better with the Agency from October that year. Much better, but not fully: in this scenario, Iran does not disclose more than strictly speaking necessary, just enough not to be caught in another act of cheating. True to its nuclear-weapon ambition it tries to rescue as much as possible and therefore baulks at full disclosure. After three years of intensive investigations, the IAEA remains unable to paint the full picture of previous efforts to acquire P-1/P-2 components.

If ‘smoking guns’ exist – which is an underlying assumption here – what is the likelihood that the Agency can find them? A ‘smoking gun’ is something which can be explained only as preparations for weapons, such as work on warhead designs, trigger mechanisms for nuclear bombs or missile electronics to deliver nuclear warheads. Here the Agency is in a bind, for it has no clear mandate to reach out for them. For instance, it has no right to demand access to military sites unless there is some indication that nuclear-related activities are or have been going on there.16 Naturally, a sovereign government will not accept international inspections at any military site for fear that important national defence information may end up with its adversaries and undermine its security.17 The Iranian government has strong reasons to be concerned about that, since the United States openly refers to the possibility of using force. Bombing raids to destroy the nuclear programme in Iran may extend, say, to the infrastructure of the revolutionary guard (the Pasdaran), so information about military sites may help shape the target lists.

Among the outstanding issues are the use or non-use of P-2 centrifuge technology, the documentation being too thin for comfort: the existence in Iran of a fifteen-page document describing the procedures for the reduction of UF6 to uranium metal and the casting and machining of it into hemispheres, i.e. into a form suitable for weapons; and allegations concerning the so-called Green Salt
project, high-explosives testing and the design of missile re-entry vehicles. The findings about the origin of enriched uranium contamination tend to support Iran’s statements, yet some questions remain (IAEA 2006a, b, c, d).

Given all the concealment efforts over so many years, the Agency may never be able to reconstruct Iran’s nuclear history and verify the correctness and completeness of Iran’s statements unless Teheran offers transparency beyond the formal requirements of the safeguards agreement and the Additional Protocol. For a while it did so, a little by little. However, when in mid-2005 the IAEA asked for better access to individuals, documentation relating to procurement, dual-use equipment, certain military-owned workshops and R&D locations, Iran found that request peculiar ‘now that matters have neared total resolution’, and expressed doubts about the integrity of the IAEA (Aghazadeh 2005). Half a year later, it ceased to implement the Additional Protocol, leaving the Agency hamstrung.

3 When the programme was exposed, and subsequent attempts at evasive action were unsuccessful, Iran decided to become fully transparent about everything involving fissile materials, but without revealing any work on non-nuclear components of nuclear weapons

This was the decision communicated to the IAEA on 21 October 2003. By that time, Iranian concealment, and the intense international condemnation and scrutiny of it through the IAEA, had surprised many Iranian decision-makers and embarrassed educated members of Iranian society. Many of them had not known about the unreported activities and were concerned that international reactions could hurt the economy severely. Therefore, continuation of undeclared activities in defiance of the safeguards agreement was considered too risky. If detected, it would damage Iran’s reputation severely. Worse, it might isolate the country and bolster its enemies.

For years, the leadership had coped very well with US sanctions, to the point of faring better with than without them. Tightening of economic relations with the European Union and others was quite another matter, however. The compromise was therefore to leave aside whatever weapon ambition that leading figures might have harboured; press ahead with the fuel-cycle programmes, the uranium enrichment programme in particular; and become fully transparent (Perkovich 2005).

Transparency, with one important modification: specific indications of past interest in nuclear weapons would not be revealed. The regime would be stupid to willingly hand over any ‘smoking gun’, that is, information about whatever research and development of non-nuclear components of nuclear-weapon systems it might have undertaken, and which the IAEA has no right to investigate anyhow. Since it is bent on building a complete indigenous fuel cycle and, thus, establish a technical option to produce fissile material for weapons, the combination of past pursuit of weapons and continued realization of a weapons option – by the same regime – would trigger stiff international reactions.
After more than two years of work based on the Additional Protocol, voluntary transparency measures offered by Iran and leads submitted by member-states, no new undeclared facility or activity has been identified. Consistent with this scenario, Iran may well have declared all its nuclear and nuclear-related activities. Given the relative ease with which ‘smoking guns’ can be hidden and the limited scope of the voluntary measures, whether or to what extent work on non-nuclear components have been going on remains an open question.

4 Iran has pursued two programmes more or less in parallel: a civilian programme and a separate production line for weapons

Assuming that at some point, the civilian programme would have to be declared, Iran has built a separate production line for nuclear weapons run by the military. Preferably, the civilian line should have been declared on Iran’s own initiative, at the latest when indigenously produced fuel would enter the first power reactor. Or it would have to be declared if exposed by others, as became the case. The trick, then, would be to work with the IAEA to establish that nothing had been diverted from the civilian line to prohibited military uses, and convince the Agency that it could and should rest its case. The first part of this has happened, but the second not.

In many ways, this is the most intriguing scenario. Technological achievements in the civilian programme have been at the disposal also of the military production line, but as long as the existence of that line has not been documented, no technology transfers have been documented either. Without known points of destination, such transfers are hard to prove. No material was ever diverted: that was part of the plan in order to have a real chance of becoming ‘clean’. More than once, Iran urged the IAEA to draw that conclusion.

If this is the way the Iranians have organized themselves, they may be only a few unresolved questions away from success. One of them – about the P-2 technology that they obtained in 1995 – is sticky, however. Iran says it has been fully occupied applying the P-1 technology and so did no work on the P-2 until 2002, when the design information was given to a small firm in Teheran. This firm developed a modified version so expeditiously that the IAEA found the story unrealistic unless it was assisted by somebody else. The Agency therefore concluded that ‘The reasons given by Iran for the apparent gap between 1995 and 2002 . . . do not provide sufficient assurance that there were no related activities carried out in that period . . .’ (IAEA 2004d).

Israel appears convinced that there is a separate, undetected military production line in Iran. The United States also asserts that there are more undetected facilities and activities there. Others are more cautious, recalling the unfounded claims that Western national intelligence agencies made about weapons of mass destruction in Iraq prior to the war in 2003. US and British services, in particular, have been discredited, casting doubt on their assessments of other cases. Claims that go significantly beyond IAEA reports are therefore met with caution and suspicion. All the more so since the hints of undeclared activities that the
United States has communicated, and the Agency has been able to check, have not been confirmed.

Some of these scenarios are more likely to capture Iranian realities than others. There is much to suggest that Iran has carried its nuclear programme as far as it has seen fit, the reactions of the outside world taken into consideration. That is, had it not been for external pressures it would have gone all the way to nuclear weapons. Imputing motives for going nuclear – security-wise and status-wise – is only too easy. Under the circumstances, a national consensus has developed in support of the fuel-cycle programme as a technological prestige project, with an in-built weapon capability. Seen this way, scenarios 2 and 3 stand out as the more realistic ones. The United States holds that it has been a weapons programme all the time, while others regard it as a civilian programme with a military spin-off.

How realistic is scenario 4? If Iran has a separate military programme, why did it gamble to accept the Additional Protocol? It did not have to. Only a minority of IAEA member-states had acceded to the Protocol and the opposition to it in the Non-aligned Movement, where Iran belongs, remains strong (Hughes 2005).19

If it nevertheless made that gamble, and a separate programme does exist, the problems it faces at Esfahan and Natanz in making the UF6 pure enough for effective enrichment, and in producing high numbers of well working centrifuges, make it unlikely that there is a much more advanced programme elsewhere. Therefore, in the worst of cases, there seems to be ample time to continue the search for a political solution to the problem.

**Major power objectives in Iran**

Major power approaches to the Iranian challenge also depend on what these powers are trying to achieve. The great majority of states want to prevent Iran from becoming a NWS. All major powers share that objective. However, they mix the non-proliferation objective with other national interests in ways that differ from case to case. The United States is working for regime change in Iran. China is careful not to rub its petroleum cooperation with the Iranians. Russia has significant arms sales to Iran, is building the first Iranian power reactor and may get contracts for many more. For China and Russia, Iran is important also in their efforts to thwart US global ambitions. The European states are the ones giving the highest priority to the non-proliferation objective.

Israel is less specific about regime change than the United States, but is keen to limit Iran’s military strength and reduce its capacity to hit at Israel. Decimating Iran is an obvious Israeli national interest.

**The United States**

The updated version of the US National Security Strategy of March 2006 enhances the focus on Iran as the next possible target of regime change. The
document has a preface signed by the President, the first words of which are ‘America is at war’. It names seven tyrannical regimes: North Korea, Iran, Syria, Cuba, Belarus, Burma and Zimbabwe. Two of them are singled out because they continue to harbour terrorists at home and sponsor terrorist activity abroad: Syria and Iran. One of them also tries to acquire nuclear weapons: Iran. The concerns about Iran are much broader than that: ‘It threatens Israel, seeks to thwart Middle East peace, disrupts democracy in Iraq, and denies the aspirations of its people for freedom.’ The conclusion is that Iran presents the single greatest threat to the United States (US Government 2006).

Bombing is not a recipe for regime change, however. On the contrary: when nations are under threat, people usually mobilize in support of their leaders. Domestic conflicts are set aside in defence of a higher cause. So why does the United States deem it vitally important to take military action, if necessary, to stop Iran from acquiring nuclear weapons?

History is one part of it. The relationship between the United States and Iran is highly politicized and deeply adversarial. The animosity towards the ayatollahs is bi-partisan. No country is more difficult for the United States to engage diplomatically than Iran. Insert Iran’s nuclear programme into this adversarial relationship and it has turned even more confrontational – especially so since the programme happened to surface in a fundamentally new international context driven by 9/11 and a much more assertive US policy. Nobody in Iran – and nobody else – could have envisaged that. It was a historical coincidence of sorts.

Another part of the explanation is physical control of oil supplies. One-third of the world’s oil supplies flows through the Strait of Hormuz, and to keep it flowing has been bedrock US foreign policy for more than fifty years. Mossadegh was overthrown partly because of an unseemly affinity to the Iranian communist party (the Tudeh party), partly because of his plans to nationalize the Iranian oil industry. The Shah’s unswerving commitment to the free flow of Iranian oil became a central pillar of the Nixon doctrine. In his final State of the Union address, President Carter declared that:

> Any attempt by any outside force to gain control of the Persian Gulf region will be regarded as an assault on the vital interests of the United States of America, and such an assault will be repelled by any means necessary, including military force.\(^{20}\)

The Reagan administration said the same, and began establishing military bases in Saudi Arabia. In 1990, when Saddam had occupied Kuwait, Secretary of Defense Cheney stated, ‘We’re there because the fact of the matter is that part of the world controls the world supply of oil, and whoever controls the supply of oil will have a stranglehold on the American economy’ (ibid.). If those considerations were not part of the reason for occupying Iraq, it would have been the first time in more than half a century that the uninterrupted flow of Gulf oil was not a central element of US foreign policy.

Today, geopolitics is first of all about energy supplies and energy security.
The United States has occupied Iraq and keeps a military presence in Afghanistan; has a number of bases in the Gulf region, including new ones in Iraq to replace those that were lost in Saudi Arabia; and deploys carrier groups in the vicinity of the Gulf. It holds the region in a tight military grip. A nuclear-armed Iran could question the credibility of that military dominance, however. Even if regime change is out of reach at this point in time, it may still make sense to strike at Iran’s nuclear programme and limit Iran’s ability to strike back.

A third part of it involves Israeli interests. Far from recognizing Israel, the Iranian President says he wants to wipe Israel off the map. To Israel, no threat is greater than nuclear weapons in Iranian hands. It is no surprise, therefore, that Israel goes by worst-case readings of the Iranian nuclear programme, claiming that Iran has a separate, secret military programme not yet uncovered – and Israeli interests weigh heavily on US decision-making. While the Democrats are not programmatically committed to regime change the way the Republicans are, any US administration will do its utmost to prevent Iran from becoming a nuclear-weapon state.

Non-proliferation and regime change are difficult to reconcile. Policies of regime change make serious negotiations impossible. If one party makes it clear that his primary objective is to cut the throat of the other, the other has little incentive to negotiate. Furthermore, if one reads the Iranian programme along the lines of scenarios 2–4, assuming a weapons ambition, there is a dynamic escalatory element in US–Iranian relations similar to the relationship between the United States and North Korea: the United States threatens Iran; Iran pushes its nuclear programme with a long-term view to keeping outside powers from dictating and attacking it; and the United States in turn uses this to put additional pressure on the regime.

**E-3/EU**

The E-3/EU – France, Germany, the United Kingdom and the High Representative of the European Union – have sought a political solution within the framework of the non-proliferation regime. Their first attempt to keep Iran unambiguously non-nuclear was part and parcel of Iran’s reorientation of 21 October 2003: not only did Iran promise to cooperate with the IAEA to become fully transparent, but on that date it also signed the Teheran Agreed Statement with the E-3/EU in which it undertook to suspend sensitive fuel-cycle works and negotiate a long-term solution to the controversy. The scope of the agreement turned out to be contentious, however, particularly with regard to Iran’s uranium conversion facility at Esfahan. Iran continued work on this facility, and eventually began to convert uranium oxide into hexafluoride.

While these negotiations unravelled, the parties signed another agreement in Paris on 15 November 2004, building on the Teheran agreement. In the Paris agreement, suspension of all enrichment-related and reprocessing activities was agreed and specified in unambiguous language. The IAEA was invited to verify and monitor the suspension. The E-3/EU recognized that the suspension was a voluntary confidence-building measure and not a legal obligation.
The long-term arrangement to be negotiated on the basis of the Paris agreement should provide ‘objective guarantees that Iran’s nuclear programme is exclusively for peaceful purposes’. In return, Iran would get ‘firm guarantees on nuclear, technological and economic cooperation and firm commitments on security issues’ (IAEA 2004e).

The parties never agreed on the operative meaning of ‘objective guarantees’. Iran emphasized that compliance with the provisions of the NPT, full transparency and application of the additional protocol is all that an NPT member can legitimately be asked to accept.22 The E-3/EU held that, in view of Iran’s long record of concealment and non-compliance with international obligations, the only way the international community could be confident that Iran is not determined to produce nuclear weapons was for Iran to forgo all enrichment and reprocessing activities, for a period of time to be defined.23 However, on 1 August 2005, Iran announced that it would restart its uranium conversion facility, and when the E-3/EU forwarded their offer to Iran a few days later, outlining the contributions they would make if Iran would abstain from fuel-cycle activities, the offer was summarily dismissed.

The Paris agreement reaffirmed the parties’ commitment to the NPT. However, the E-3/EU emphasized that exercise of the ‘inalienable right’ to develop nuclear energy for peaceful purposes must be ‘in conformity with’ Articles I and II, and that there could be no confidence that fuel-cycle facilities on top of deceit and deception would meet that requirement.

Russia

In the early days of his presidency, Vladimir Putin worked to improve ties with China, India and Iran while at the same time reaching out to Europe and the United States. Moves in one direction were offset by moves in another. After 9/11, Putin seized the opportunity to forge a stronger partnership with the Western world. In so doing, he changed the international political agenda in such a way that in the future it became less likely that Russia would be involved in humiliating disputes with the United States and other Western powers. Throughout the 1990s, Russia had been the loser in several important conflicts of interest.24 In effect, Putin recognized the global political primacy of the United States and realigned Russia with the new realities of power.

The United States has been leaning on Russia to minimize its nuclear cooperation with Iran as a part of a broader policy of sanctions, and of stopping arms transfers to the ayatollahs in particular (Broder 2000).25 For this reason or for reasons of its own or both, Russia declined Iranian demands in 1990 for a heavy water reactor, and later turned down a request for gas centrifuges which had been part of a deal made in 1995.26 The Yeltsin government also rejected an invitation to assist Iran in the mining of uranium. Similarly, the plans to sell Russian laser enrichment technology were scuttled under US pressure in 2000 (Miller 2000).

In the case of Bushehr, however, Russia made it clear that it will finish the light water reactor under construction there, and that it stands ready to build five
more power reactors over the next decade at an estimated cost of US$10 billion (Baker 2002). The United States, which had been opposed to the entire Iranian nuclear programme, was reluctant about the Bushehr reactor. Its concern was not primarily about the handling of the spent fuel: Russia would provide the fresh fuel and take the spent fuel back. It had more to do with the associated transfer of know-how and expertise. By augmenting Iran’s nuclear infrastructure and involving thousands of Russian nuclear scientists, the project would contribute indirectly to the weapon programme. On its part, Russia stressed that Iran must abide by its non-proliferation obligations and ratify the additional safeguards protocol.

The United States has also criticized Moscow for transferring missile technologies to Iran in violation of the MTCR agreement. At the Moscow/St Petersburg summit in 2002, this became a matter of dispute. Putin refuted the claim and pledged that Russia’s cooperation with Iran was strictly in accordance with its obligations under the international non-proliferation regime. He countered that Western companies, not Russian entities, had furnished Iran with missile and nuclear technologies (Nuclear Threat Initiative 2003).27

While cooperating with the United States on a variety of issues, especially after 9/11, nuclear cooperation with Iran became a litmus test of the independence of Russian foreign policy in the face of US pressure. Hence, Russian–Iranian affairs got a symbolic value in addition to their economic and political importance. In recent years, the scope of the cooperation has been clarified and restricted in a way that makes it legitimate in the view of the E-3/EU. Also in the future, Russia can be expected to chart its own course on the Iranian nuclear issue, be it in relation to the United States or the European Union or in multilateral fora such as the IAEA Board of Governors and the UN Security Council.

China

In 2004, China signed two agreements with Iran for the import of altogether 360 million tons of liquefied natural gas (LNG) over a period of twenty-five years. In addition to LNG, China will import 150 barrels per day of crude oil over the same period. At the end of 2004, China became Iran’s top oil export market. Also, China agreed to invest US$100 billion in Iran’s energy sector over the coming twenty-five years. Next to Russia, Iran has become its most important foreign source of petroleum. To secure continued high economic growth, nothing is more important for China than adequate energy supplies (Thompson 2005).

In some important respects, China, Russia and Iran are political partners. China and Russia emphasize that Sino-Russian relations have reached ‘unparalleled heights’,28 and Iran is an important partner for both of them. Along with energy supplies, arms transfers and investments, the triangle cultivates compatible foreign policies. On important issues like Taiwan and Chechnya they are holding identical positions. China and Iran support Putin’s war against the
Chechen separatists, and the recent promulgation of China’s anti-secession law, stating Beijing’s intolerance of Taiwanese independence in no uncertain terms, was heartily commended in both Moscow and Teheran. Another common denominator is their opposition to US unilateralism.

The joint statement from the China–Russia summit of 14 October 2004 issued a strong rejection of the Bush administration’s unilateral foreign policy. It noted that

it is urgently needed to compose international disputes under the chairing of the UN and resolve crises on the basis of universally recognized principles of international law. Any coercive action should only be taken with the approval of the UN Security Council and enforced under its supervision.

The China–Iran–Russia triangle is Beijing’s and Moscow’s way of countering US global ambitions. Seen in this perspective, Iran is integral to the broader effort to thwart the Bush administration’s foreign policy goals. For this and other reasons, China and Russia oppose punitive action against Iran over its nuclear programme.

China also has a history of nuclear assistance to Iran that goes back to the mid-1980s, when Iran restarted its programme. It reportedly trained Iranian nuclear technicians and engineers in China under a ten-year agreement for cooperation signed in 1990. It supplied Iran with two small research reactors installed at Esfahan, and provided an amount of UF4 and UF6 (hexafluoride) (IAEA 2003c). Like Russia, it brought some important nuclear transfers to a halt: the sale of a plutonium-production research reactor and of two 300 MWe power reactors was cancelled. The cancellations may have been caused by a variety of factors, however, not just US pressure (Cirincione et al. 2002). At the US–China summit of October 1997, China undertook to stop almost all its existing nuclear assistance to Iran and not to enter any new agreements in this field. The commitment included a pledge to terminate the sale of a uranium conversion plant to Iran. In 2001, the United States concluded that China had lived up to the commitment, but that Chinese missile assistance continued to pose a proliferation risk (US Department of Defense 2001). However, in the case of neither China nor Russia is there any hard evidence to prove that they have been acting in violation of their MTCR commitments.

Conflicting approaches to the problem

The major powers read the Iranian challenge differently; they pursue different objectives in Iran; and they therefore differ in their practical approaches to the challenge. The differences can be analysed along a number of lines. In the most rudimentary of terms, there is a dividing line between the E-3/EU and the United States on the one hand, and Russia and China supported by non-aligned states on the other. There are important differences also between the E-3/EU and the United States.
The Western states assume that Iran has weapons ambitions. The Europeans read the challenge along the lines of scenarios 2 and 3 – scenario 2 meaning that Iran actively conducts a weapons programme while scenario 3 leaves a weapon option that could be realized on short notice at some later stage, somewhat similar to the situation in Japan. The United States perceives the problem along the lines of scenarios 2 and 4, assuming in both cases that there remain undeclared activities in Iran. Germany may have been more cautious than other Western powers about imputing a weapons motive into Iranian behaviour.

Russia and China have been less explicit about their understanding of the Iranian programme. They appear more relaxed about its weapons potential – certainly more so than the United States – although Russia has been leaning on Iran to go by the additional safeguards protocol and send spent reactor fuel of Russian origin back to Russia. They have been acting as if scenario 1 might be proven correct, and have pleaded for the IAEA to be given sufficient time and all necessary means to carry its investigations to an end.

Russia and China joined the other big powers in calling on Iran to suspend all enrichment and reprocessing works and let the IAEA back in, full scale, in order to facilitate a political solution. China may be ready to normalize relations if and when the IAEA concludes – however guardedly – that there are no undeclared facilities or activities in Iran, and the strongest safeguards provisions apply there. The Chinese may agree with the Iranians that this would amount to an objective guarantee of peaceful intent. Russia may be leaning in the same direction. It is unwavering in its commitment to Bushehr and future power reactor deals, and the Russia–China–Iran triangle strengthens its determination to go ahead. However, as long as the IAEA is unable to conclude on the Iranian file, this is a hypothetical question.

Many non-aligned states explicitly support the Iranian claim that it has an ‘inalienable right’ under Article IV of the NPT to acquire fuel-cycle facilities. They object to US and other NWS attempts to redress the fundamental trade-offs on which the NPT is built, emphasizing non-proliferation at the expense of disarmament and peaceful uses of nuclear energy.

Iran’s response to the Framework for a Long-term Agreement offered by the E-3/EU on 5 August 2005 was stiff: ‘the proposal is extremely long on demands . . . [and] absurdly short on offers to Iran . . . [and] amounts to an insult to the Iranian nation . . .’ (Islamic Republic of Iran 2005).

At the core of the offer were assurances of fuel supply for Iranian power reactors in return for a halt to all fuel-cycle activities in Iran. The proposal elaborates on how the fuel supply can be assured in practice, expressing support for the cooperation between Russia and Iran and committing the E-3/EU to assist in the establishment of a buffer store of fuel, sufficient to maintain supplies at the
contracted rate for a period of five years. While international supply arrange-
ments can never be as reliable as domestic sources of supply, and the buffer
store would be located outside Iran, the credibility of these assurances is high.
They are made by a group of states and communicated to all interested parties
through an international organization (the IAEA), and so cannot be withdrawn
all of a sudden by any single government. It is suggested that the IAEA ‘might
be invited to monitor the operation of the mechanism and certify its operation on

The Framework recognized Iran’s right to develop a nuclear power pro-
gramme to reduce its dependence on oil and gas and to choose the most appro-
priate mix of energy sources. However, it stopped short of offering Iran light
water reactors. While Article IV of the NPT commits supplier states to facilitate
access to technology for NNWS parties, the Framework only promised ‘not to
impede participation in open competitive tendering’ (ibid.: para. 19b).

In addition to stopping all fuel-cycle activities, reconfirming its NPT obliga-
tions and ratifying the Additional Protocol, Iran should undertake to cooperate
pro-actively with the IAEA to solve all outstanding issues, ‘including by allowing
IAEA inspectors to visit any site or interview any person they deem relevant to
their monitoring of nuclear activity in Iran’. In response, Iran noted that such
inspections would go beyond the Additional Protocol, and considered this demand
an intimidating infringement of its sovereignty (Islamic Republic of Iran 2005).

The Paris guidelines said the long-term agreement ‘will . . . provide . . . firm
commitments on security issues’. The offer did not do that. It merely referred to
the UN Charter and reaffirmed the security assurances that France and the
United Kingdom have given together with the other veto powers, summarized in
to work for a zone free of weapons of mass destruction in the Middle East, but
without introducing any new element that could take that proposition forward.
As part of an overall agreement, the E-3/EU would welcome an expanded dia-
logue on regional security issues. However, all of this is far from addressing
Iran’s security concerns in a firm manner.

Neither is it easy for the E-3/EU to do so, for the main threat to Iranian secur-
ity comes from the United States. When working on the Paris agreement, the
Europeans deemed it important that the United States should be comfortable
with its provisions and in the negotiations that followed, they kept the United
States well informed. However, far from considering any security assurances for
Iran, the United States did military contingency planning and kept the pressure
on the ayatollahs up.

In the early stages of the negotiations, the United States made two gestures: it
would no longer object to Iranian negotiations for WTO membership, and it was
willing to provide spare parts for Iranian civilian aircraft. WTO negotiations had
been on the Iranian demand list to the Europeans. There is a long way, however,
from the start of WTO negotiations to their successful conclusion. There are a
great many ways in which the talks might derail. Far from meeting main Iranian
concerns, Teheran scoffed at Washington’s gestures.
However, the US offer was addressed to the Europeans as much as to the Iranians. It conveyed a semblance of support for the European diplomatic endeavour while staying at a distance. Since the Iranian fuel-cycle activities would be suspended for as long as the negotiations lasted, and the suspension was defined in accurate and comprehensive terms, diplomacy bought valuable time for the Americans. Not knowing what to do – there was no clarity in Washington about the proper approach to the Iranian problem – buying time was a sensible strategy. As long as the Europeans stayed committed to halting all fuel-cycle works in Iran – which they did – the talks could do no harm. They could only be helpful. However, the United States never gave them much of a chance beyond being a holding manoeuvre.

The Framework for a Long-term Agreement was too little too late. At an earlier stage of the negotiations it could have made sense as an input for further consideration, but five days past the 1 August deadline it had no chance of winning Iranian acceptance. The European negotiators hardly failed to foresee that, although they may have been surprised by the strong-worded, categorical rejection.

The path of escalation

In short: August 2005 was a turning point. Iran brusquely turned the E-3/EU offer down; in a comment, President Bush ended in reference to the use of force; to which Chancellor Schröder said that under no circumstance would Germany participate in an armed attack (‘Germany …’ 2005). In Iran, Mahmoud Ahmadinejad was elected President: with him, new leaders took office, many of them with a background in the Revolutionary Guard. The conflict was set on a path of escalation.

The Americans used every occasion to escalate the conflict. More than anybody else, they framed the discussions at the IAEA, constraining the action space of other governments, big and small. At the September meeting of the IAEA Board of Governors, for the first time since the vote to refer North Korea to the Security Council in 1993 the Board did not move by consensus, but adopted a resolution by majority vote referring to Iranian non-compliance and to a resulting absence of confidence that ‘give rise to questions that are within the competence of the Security Council’ (IAEA 2005d).

At the same time, the experience from Iraq and Afghanistan proved that even the United States could benefit from cooperating with others and building international legitimacy for its policies. Thus it was mindful of the importance of building a broad coalition against Iran. The conflict therefore escalated slowly but steadily to the point where in January 2006 the time for talk seemed to have come to an end, except for Security Council considerations of punitive measures. Two months later, the updated National Security Strategy named Iran the single greatest threat to the United States.

In 2003, the inspection process in Iraq was overtaken by the urge to go to war. Two years later, the inspection process in Iran was overwhelmed by the
politics of the matter. On 4 February 2006, the Board of Governors reported Iran to the Security Council. The next day, Iran withdrew from the Additional Protocol – as it had said it would do. From then on, the Agency’s ability to look for facilities and activities that might not have been declared has been severely restricted. Over time, this is going to enhance uncertainty about what is going on in Iran, and strengthen the case of those who believe in punitive measures, the use of force included.

In all of this, the provocative statements of the new Iranian President were seen to play into the hands of Western hawks. In the eyes of many observers, Ahmadinejad became their useful idiot.

However, those statements may also be understood in quite a different way. There were a great many of them. Israel should be wiped off the map. Doubts were expressed about Holocaust: did it really take place? Few questions can create such anger in the Western world. Nuclear technology could be transferred to Sudan, which has an Islamist regime (but no industrial basis for a nuclear programme). In mid-April, the President even alluded to Iranian application of the second-generation technology for enrichment (P-2), which Iran got from the Khan network in the mid-1990s, but which it said it had put aside because it had its hands full mastering first-generation centrifuges (P-1). For a long while, the whereabouts of the P-2 technology had been a critical point in the IAEA’s efforts to map the nuclear programme, and it still is. The reactions were predictable. Aha, didn’t we expect that? Don’t they have a secret, military production line based on P-2 centrifuges? The conclusion seems obvious: far from being useful idiots, the Iranians deliberately escalated the conflict to the highest political levels. Or, if it was not deliberate, their behaviour clearly had that effect.

Why? Ahmadinejad’s predecessor, the liberal Mohammed Khatami, tried to be forthcoming to the West, but to little or no avail. The new leaders were all the more convinced that a soft line would lead nowhere. They did not disregard the risk of war: being part of the Axis of Evil, the threat was obvious. Defensive measures, including tunnels and cavities in hard rock to keep valuable assets from being destroyed, were taken. At the same time, getting on talking terms with the United States was of the essence. Only by striking a deal with the United States could their security be much improved if not ensured and their relations with the Western world normalized. They made no secret of this. The question was one of timing.

Course correction: playing for time

In late winter/spring of 2006, President Bush faced mounting problems. Iraq developed from bad to worse; the repercussions of Hurricanes Katrina and Rita haunted him; other domestic problems also weighed in and brought his popularity down to a historical low. While in January there was significant public support for bombing Iran, confidence in the President’s hard-line Middle East policy dropped throughout the year. As the congressional elections came up on the radar screen of US politics, an attack on Iran appeared too risky for comfort.
The government therefore settled for multilateral diplomacy in a play for time. The Iranian issue went back and forth between Vienna and New York, and in early June the United States even joined the E-3, Russia and China in presenting another incentives package to Iran, improving on the offer that the E-3/EU had made in August 2005. The Iranians therefore had their strategy right: this was the time to bring the conflict to the highest political level in a bid for direct talks with the United States, for at this stage the United States was not ready for military action but in a diplomatic mode buying time. More than anything else, the course correction was due to George W. Bush’s problems at home, with the domestic criticism of his Iraq policies in particular. For Americans, the home ground is more than half the world.

In the Framework for a Long-term Agreement, the E-3/EU were more cautious about light water reactor supplies than the wording of Article IV of the NPT would suggest. In the new offer, the P5+1 did better, committing ‘to support actively the building of light water reactors in Iran, in accordance with the IAEA statute and the NPT’ (Islamic Republic of Iran 2005; UNSC S/2006/521). On the other hand, the security assurances remained vague, limited to support for a new conference to promote dialogue and cooperation on regional security issues. Moreover, while the commitment on light water reactors is a commitment ‘up front’ to create the right conditions for negotiations, a conference on regional security issues is an agenda item for the negotiations on a long-term comprehensive agreement.

In response, Iran sought clarification on a number of issues. It wanted firm guarantees on the sale of light water reactors, noting that US sanctions presently prohibit such transfers to Iran. Is the United States ready to lift some if not all of the sanctions? Furthermore, it sought clarification of the proposal for a regional security conference and, also, on the timeline of the promised economic and trade incentives (Maleki and Afrasiabi 2006).

Regarding suspension of the fuel-cycle elements as a precondition for negotiations, Iran stated that everything would be negotiable – the future of enrichment and reprocessing works included – but that suspension of them could not be a precondition for resumption of talks. This matter is at the core of the conflict: Iran’s failure to meet the requirements of Security Council resolution 1696 of 30 July, confirmed by the IAEA report on safeguards implementation of 31 August 2006, activates Council discussions of appropriate measures under Article 41 of Chapter VII of the UN Charter, i.e. sanctions (UNSC Resolution 1696: para. 8).

Rather than moving straight into discussions of sanctions, however, the European Union engaged Iran in follow-on talks about the P5+1 offer and the Iranian response to it. China and Russia clearly preferred continued diplomacy over punitive measures. The UN Secretary General also pleaded for more time for talks. The United States recommended a gradual approach to sanctions, starting with travel bans and a freeze of bank accounts and extending into more severe measures like trade sanctions. While keeping up a certain pressure to escalate, not to appear inconsistent, this was not a matter of urgency for the
United States either. The administration seemed intent on going low and slow ahead of the congressional elections.

**A peaceful solution?**

A peaceful solution rests on US willingness to engage Iran diplomatically, and on Iranian readiness to cut back on its fuel-cycle ambitions, become fully transparent and substitute cooperation for confrontation.

Some time ago, there were bilateral talks between the United States and Iran on the situation in Afghanistan. Later, a green light was given for talks between the US ambassador in Baghdad and Iranian counterparts. The United States underlined that the talks would be about Iraqi matters and nothing else. To be of interest to Iran, however, their scope would have to be enlarged. It seems that different views on framing and modalities brought the initiative to nothing. With rare exceptions, talking with the priesthood in Teheran has been anathema for all US governments.

However, in connection with the P5+1 offer, the United States said it would come to the table together with the other five – i.e. in a format similar to the six-power talks on North Korea – if Iran met the conditions spelt out by the IAEA/the Security Council. To Iran, this meant defeat first and talks afterwards. Instead, it took the view that everything was negotiable, but that there could be no preconditions. In short, the Iranian effort to engage the United States came to something, but not to any practical results.

It takes a change of mindset for the Bush administration to sit down with the Iranians to negotiate the nuclear and other inflamed issues. The tactical adjustments of 2006 meant nothing of that sort: no change of strategy or objectives was indicated. The administration remained adamantly opposed to appeasement of its enemies, warning against any repeat of the mistakes of the 1930s. The Israelis do not resist attempts to reach a political solution, but they are sensitive to any softening of the stance. They seek a solution, one way or the other, while Bush is at the helm – and that solution must eliminate the Iranian nuclear threat to Israel. They do not want to leave the question to the next US administration.

Still, a turnaround cannot be ruled out. Should the problems in the Middle East become ever more intractable, and the US President stay weak and beleaguered, with little domestic support for military action, a political deal with Iran may seem better than no effective policy at all. The President has emphasized, repeatedly, that the worst weapons must be kept out of the worst hands, and the neo-cons like to be seen as men of action. Therefore, while bilateral talks take a major change of mindset, with scant support for the use of force and great uncertainty about its consequences throughout the Middle East it cannot be excluded. After all, the worst of all possible outcomes may be to leave the White House without having achieved anything, only seeing the Iranian problem vexing.
Notes

1 Pakistani Foreign Minister Aga Shahi visited Khomeini shortly after the revolution, and warned him that if he let the nuclear programme slip it would take a long time to build it up again. In response, the ayatollah talked about the ouster of Mossadeq and the US interference in Iran through the Shah. It was clear that in his cosmology there was no place for nuclear matters. Personal communication from Aga Shahi to the author.

2 In August 2004, Iran presented to the Agency drawings that it had received from a foreign company in 1977 for hot cells that were to be constructed at Esfahan.

3 The NCRI announcement was made on 14 August 2002. In September, Iran informed the IAEA that the facilities were built as part of a programme to develop a nuclear fuel cycle.

4 In the mid-1970s, Qadeer Khan stole the P-1 technology from URENCO, a tripartite enrichment plant at Almelo, the Netherlands.

5 Kalaye Electric is based in Teheran and belongs to the AECI.

6 All of this according to Iran’s own reporting to the IAEA.

7 Six instances of failure to report certain activities, mostly concerning enrichment and laser experimentation and including the import of uranium gas from China in 1991; two instances of failure to declare enrichment facilities; six instances of failure to provide design information or updated design information for certain facilities; and a general charge of failure on many occasions to cooperate to facilitate the implementation of safeguards, as evidenced by extensive concealment activities.

8 Signature and commitment of December 2003. The Parliament did not ratify the agreement.

9 In a letter of 27 April 2006, Iran said it would ‘provide a timetable within the next three weeks’ for clarification of the remaining outstanding issues within the framework of the Comprehensive Safeguards Agreement (INFCIRC 153). By September 2006, no such timetable had been received by the Agency.

10 In the past two years, the IAEA has found discrepancies in the reports of as many as fifteen countries.

11 It has been indicated that Israel is conducting human intelligence within Iran from Kurdish-controlled territories in northern Iraq, where it has established a presence, and that the United States is doing the same out of Pakistan in cooperation with Pakistanis who have been involved in nuclear cooperation with Iran.

12 CIRUS, obtained from Canada ten years earlier. Sometimes, natural uranium/heavy water reactors of about this size have been referred to – ominously – as the CIRUS line.

13 Built with French assistance, it became operational in 1963. Initially, the capacity of the reactor was in the neighbourhood of 30 MWt. Later, it has been upgraded.

14 To improve the safety of complex operations, they are often made simpler and more automatic inter alia to reduce the risk of human error. A spin-off of such improvements is therefore lower operating costs.

15 According to the NSG, it seeks to cover the rare but important cases where adherence to the NPT or to a NWFZ may not by itself guarantee that a state will remain in compliance with its obligations (Rauf, Chapter 15, this volume).

16 Iran provided access to military sites at Parchin and Kolahdouz on a voluntary basis. More access to military sites was nearly agreed when the EU–Iran negotiations went off the rails.

17 IAEA inspectors visited military sites at Kolahdouz, Lavisan and Parchin. Nothing was found. At Parchin, the Agency divided the area into four sectors and asked for permission to inspect two of them. At first, Iran allowed it to pick one sector; later, it got access to the other one, too.

18 Information made available to the Agency about ‘alleged studies, known as the Green
Salt Project, concerning conversion of uranium dioxide into UF4 (often referred to as “green salt”), as well as tests related to high explosives and the design of a missile re-entry vehicle, all of which could involve nuclear material and which appear to have administrative interconnections’. (IAEA 2006a).

19 Former IAEA Deputy Director for safeguards, Bruno Pellaud, says he does not believe Iran has a military programme. ‘My view is based on the fact that Iran took a major gamble in December 2003 by allowing a much more intrusive capability to the IAEA. If Iran had had a military programme they would not have allowed the IAEA to come under this Additional Protocol. They did not have to.’ (Pellaud 2005b).


21 Iran undertook to ‘continue and extend its suspension to include all enrichment related and reprocessing activities, and specifically: the manufacture and import of gas centrifuges and their components; the assembly, installation, testing or operation of gas centrifuges; work to undertake any plutonium separation, or to construct or operate any plutonium separation installation; and all tests or production of any uranium conversion installation.’ (IAEA 2004e).

22 By the end of 2005, the additional protocol was in force in eighty-four states only.

23 Western powers probably conceived of a moratorium on enrichment and reprocessing in Iran of the order of twenty years or so.

24 Enlargement of NATO, US withdrawal from the ABM Treaty, NATO’s intervention in Kosovo and another round of NATO enlargement. Putin managed to extricate Russia from a pattern of clash and defeat.

25 In a secret deal of June 1995, Prime Minister Chernomyrdin and Vice-president Gore agreed that Russia should stop military cooperation with Iran in 2000 upon completion of existing contracts. The deal was disclosed by the New York Times. In Russia, Chernomyrdin was overruled: the cooperation continued.

26 Other elements of that deal were an agreement, in principle, for Russia to supply a 30–50 MWt light water research reactor, 2,000 metric tons of natural uranium and the training of Iranian graduates in the nuclear field in Russia.

27 Putin made this claim on 20 September 2003.

28 This expression was used in connection with the summit meeting in October 2004, when long-standing border issues were settled and Moscow and Beijing agreed to hold joint military exercises in 2005, for the first time since 1958: Asia Times Online, ‘The ties that bind China, Russia and Iran’: www.atimes.com/atimes/China/GF04Ad07.html.


30 Adopted by a vote of twenty-two in favour, one against and twelve abstentions.


32 Three different polls from the second half of January 2006 showed 57, 42 and 41 per cent support for military action against Iran’s nuclear programme. www.pollingreport.com/iran.htm. In May, the Pew Research Center reported 30 per cent support for bombing military targets in Iran. people-press.ord/reports/display.php3?ReportID=277.

33 ‘Parties to the Treaty in a position to do so shall also cooperate in contributing alone or together with other States or international organizations to the further development of the applications of nuclear energy for peaceful purposes, especially in the territories of non-nuclear-weapon States Party to the Treaty, with due consideration for the needs of the developing areas of the world.’ From Article IV of the NPT.

34 ‘There are times when a little patience is more effective,’ interview with Le Monde, here as quoted in the International Herald Tribune, 6 September 2006.
In this chapter, I examine why one small state, North Korea (the DPRK), developed nuclear weapons, and also survived sustained US pressure to abandon its nuclear-weapons programme. The DPRK has loudly asserted that it has nuclear weapons while keeping its actual capacities almost completely hidden. On 9 October 2006, the DPRK conducted a nuclear test (Hayes 2006; Hayes and Kang 2006; Hayes and Savage 2006).

My principal argument is that while the Cold War threat environment persisted, the United States was able to construct and sustain a system of nuclear hegemony that revolved around shared understandings of the role played by US nuclear weaponry in deterring Soviet and Chinese nuclear threats to regional states. These understandings were shared by both Washington’s allies and its antagonists, the Soviet Union and China. The United States used its overwhelming power to curtail the nuclear aspirations of its allies in the midst of the Cold War, and entered into an explicit bargain wherein local elites surrendered their nuclear sovereignty in return for not only extended deterrence but also the assurance that they would not be faced by further nuclear proliferation in their neighbourhood. However, this system was to prove completely incapable of encompassing North Korea, a country profoundly affected by decades of nuclear threat from the United States and insulated by virtue of its geopolitical position from any external influence that might have been exerted by its erstwhile allies, the Soviet Union and China, until it was too late.

The DPRK nuclear challenge came at the same time that US nuclear strategy became highly contested within its own alliance system. Allied elites were increasingly disaffected by US unilateralism, on the one hand, and the inability of the global non-proliferation regime to halt the spread of nuclear weapons on the other. A DPRK nuclear breakout nullified the bargain underpinning US nuclear hegemony in the region. Ironically, the DPRK first tried to use the nuclear threat to establish a dialogue and eventually achieve a security relationship with its nuclear arch-enemy, the United States. The latter notion was so improbable that almost the entire US security elite was unable to discern, recognize or respond to the North Koreans except in orthodox strategic terms of projecting more nuclear threat, thereby almost guaranteeing that the DPRK would proliferate. The more the DPRK tried to evoke a response from the United States
with nuclear threat, the more it was spurned; this in turn generated even more outrageous responses from North Korea, until it finally left the non-proliferation regime.

In this context, the IAEA-NPT system simply offered targets of opportunity whereby North Korea attempted to force the United States to negotiate at critical junctures, with some success. Far from fearing inspections, Pyongyang found that frustrating or evicting IAEA inspectors set off alarm bells in Washington, making Americans pay attention to a small state that was seeking to negotiate an end to a protracted conflict.

The IAEA was not merely an innocent bystander caught in this crossfire. The IAEA’s own concerns in the post-Iraq nuclear inspections debacle and its determination to re-establish the credibility of its own safeguards and inspection system led it to move the goalposts for North Korea in ways that can only be construed as political and discriminatory. The IAEA did nothing to address Pyongyang’s security concerns in the face of a US nuclear threat against a NPT member-state, and the other great powers and nuclear-weapons states party to the conflict did nothing to offset US power in the IAEA process or to insulate the DPRK against US nuclear threat. The more the IAEA insisted that the DPRK conform to its discriminatory standards, the more the latter attacked core IAEA institutions in order to force the United States to address its concerns on a bilateral basis. Thus the IAEA not only complicated US diplomacy – the standard US complaint about how it behaved during the negotiations with North Korea – but also intervened in ways that worsened North Korea’s nuclear insecurity and supported the US nuclear threat against that country.

Unsurprisingly, North Korea’s ‘stalker’ strategy was bound to fail. In part, the United States was unmoved because it had other, more important concerns and could afford simply to ignore North Korea’s threat and rely on raw power to respond to rather than negotiate on Pyongyang’s terms. At a strategic level, therefore, the DPRK’s use of nuclear weapons to stalk the United States in an attempt to obtain a security relationship was flawed from the start – extortion can only breed distrust and worsen relations – and left the DPRK in an exhausted, ruinous condition, possibly near collapse and uncertain as to its ability to survive in the long term.

Conversely, the failure of the nuclear hegemon to overcome nuclear threat from a small state has damaged badly US leadership in the region as well as the global non-proliferation system. North Korea’s apparently successful proliferation of nuclear weapons poses the possibility of a chain reaction of proliferation in East Asia involving Japan, Taiwan, South Korea and possibly Australia, Indonesia and even Burma in the long run as states abandon their acquiescence to US nuclear hegemony.

**North Korea’s nuclear quest**

Looking back at US nuclear war-planning and now available intelligence analysis in the 1970s and 1980s, we may say that the United States was amazingly
complacent, even lackadaisical, about the possibilities of DPRK nuclear proliferation (Wit et al. 2004: 3). It appears that for almost the entire Cold War, Washington simply assumed that the DPRK was either a satellite of the Soviet Union or China, or would simply absorb whatever nuclear threats the United States chose to project against it and do nothing. Declassified Russian and Eastern European documents indicate that North Korea’s leadership was intensely aware that neither of these nuclear-weapon states would extend much – if any – nuclear deterrence, and that the DPRK stood alone against the US military and its nuclear weapons in South Korea (Litwak and Weathersby 2005).

The DPRK began its slow but persistent acquisition of nuclear fuel-cycle technology over these same decades, beginning with a small research reactor supplied by the Soviet Union, and then demands for power reactors (rebuffed by Moscow), followed by development of domestic reactors using locally mined uranium in the mid-1980s (‘The history of . . .’ 2005). The DPRK decentralized its industry so as to be less targetable by strategic air attack and built subterranean retreats for the entire population in an attempt to defeat the threat of strategic bombing of all kinds. The nuclear threat affected every aspect of North Korean life and reinforced its siege mentality.

By 1970, the DPRK leadership was undoubtedly aware of the attempt by the ROK (South Korea) to acquire nuclear-weapons capacities – possibly even before the United States awoke to what was going on – a development that must have shaken the North’s leaders to the core. From 1969 to 1973, and uninhibited by the newly minted Nuclear Non-proliferation Treaty, South Korea’s military dictator Park Chung Hee orchestrated this drive which was ended only when Washington threatened to terminate the alliance if the ROK did not desist (see Hayes 1993b).

By the mid-1980s US intelligence agencies began to focus intently on the construction of a small reactor at Yongbyon (Wit et al. 2004; CIA 1983, 1986: 15). As intelligence on North Korea’s nuclear fuel cycle began to accumulate, Washington was particularly concerned about the delay in Pyongyang’s signing and implementing a nuclear safeguards agreement with the IAEA. Unable to communicate directly with Pyongyang due to its self-imposed refusal to talk with North Korean diplomats, and hamstrung by the lack of diplomatic relations, the US State Department invoked Soviet influence to prompt the DPRK to complete this process. The DPRK finally acceded on 12 December 1985 (Fischer 1997a), in return for which the Soviet Union agreed to sell a nuclear power reactor to the DPRK. However, years dragged on, and by 1986, when the research reactor came into operation, Washington was increasingly uneasy at what it perceived to be Pyongyang’s foot-dragging.

Incredibly, the IAEA had sent the wrong safeguards agreement for signature to the DPRK, which, after spending considerable time, sent it back to Vienna. The IAEA insisted that the DPRK sign the agreement that it had sent, whereupon the DPRK, again after many months, refused. Only then did the IAEA send the right agreement, and with Soviet ‘encouragement’, Pyongyang concluded the safeguards agreement with the IAEA (Wit et al. 2004: 3). However,
the eighteen-month delay enabled the DPRK to operate and de-fuel its plutonium-producing research reactor in 1990. This was years before IAEA inspectors arrived, thus laying the foundations for the first nuclear confrontation during the Clinton administration.

**Bush Senior’s coercive diplomacy**

The George Bush Sr administration understood the political risk to US nuclear hegemony posed by forward-deployed nuclear weapons in Korea; it also realized that these weapons had little or negative military utility. On 27 September 1991, President Bush Sr announced the global withdrawal of all forward-deployed tactical and theatre nuclear weapons (Wit et al. 2004: 8). After tense consultations with South Korea, and seeking to bring maximum pressure to bear on North Korea to comply with its NPT and IAEA obligations, the United States decided to pull out all nuclear weapons, including gravity bombs (in contrast to Europe, where the latter were left in place).

Pyongyang’s nuclear motivations at this time can be summed up in a single phrase: ‘The barrier that makes the water flow’. Now it wanted to break out of the Cold War mould, and senior figures in the Korean Workers’ Party began a concerted campaign to communicate with the Americans. Washington responded to the DPRK’s overtures; US diplomat Arnold Kantor met with Korean Workers’ Party boss Kim Yong Sun in New York in February 1992, where Kim stated that US forces could stay in Korea after reunification, as part of a proposed joint anti-Japanese stance (Oberdorfer 1997: 266–7). In early 1992, the United States cancelled the huge Team Spirit military exercise in South Korea. After a blizzard of inter-Korean contact, the United States supported the Joint Declaration on the Denuclearization of the Korean Peninsula (‘Joint declaration . . .’ 1992), in effect the creation of a nuclear-free zone in the Korean Peninsula, signed by the DPRK and the ROK in February 1992.

In April 1992, IAEA Director Hans Blix visited the DPRK after it had finally signed and ratified the IAEA safeguards agreement. It had declared to the IAEA that it had separated 92 g of plutonium in 1989, ostensibly from damaged reactor fuel as part of an experiment. It also revealed the existence of a reprocessing plant that US intelligence agencies had identified in 1989 (Wit et al. 2004: 12–13). However, the IAEA’s July and September 1992 inspections revealed that the DPRK had reprocessed on more than the one occasion declared, and tensions between the Agency and Pyongyang rapidly began to emerge, as well as with the ROK and the United States in the latter half of 1993. When the DPRK refused the Agency access to a building that the United States had alerted it might contain nuclear waste, the IAEA planned a special meeting of its Board of Governors to consider referring this non-compliance to the UN Security Council (Wit et al. 2004: 14–15).

In November 1992, in the midst of US presidential elections, Washington rebuffed another overture from Kim Yong Sun to enter into a dialogue on the conflicts between the DPRK and the United States. At the time, he was seeking
to use the nuclear issue as a way to better relations between the United States and his country (Martin 2004: 437).4

As the Bush Sr administration came to an end, it was clear that it had failed to contain the DPRK nuclear proliferation threat and to avoid the downward spiral toward confrontation with and proliferation by the DPRK (see IAEA 2003a; Bernstein et al. 1992).

Clinton’s nuclear roller-coaster ride

After President Clinton entered the White House in January 1993, the IAEA collided head-on with North Korea. When talks failed to move Pyongyang to accept IAEA demands for access to disputed sites, the Agency called for special inspections and a special Board of Governors’ meeting to endorse its demand that the DPRK accede to special inspections. The Board met on 22 February 1993; after reviewing US satellite images of DPRK nuclear facilities, it called on Pyongyang on 25 February to comply within a month by allowing access to two disputed sites (but did not specifically refer to special inspections in order to keep China’s support) (Wit et al. 2004: 18–21). IAEA Director Hans Blix requested that inspections start on 21 March, at which point the DPRK referred ominously to counter-measures of self-defence to preserve sovereignty, which clearly prefigured its dramatic 12 March 1993 declaration of intent to withdraw from the NPT. On 1 March 1993, the IAEA Board of Governors found the DPRK to be in non-compliance. On 4 April, after much manoeuvring among member-states, the UN Security Council president expressed concern and called on all parties to resolve the issues.

The United States sought to strengthen the role of IAEA in how the nuclear issue with the DPRK was resolved, whereas the North Koreans viewed the IAEA as a US pawn and attempted to weaken it while seeking direct dialogue with Washington to resolve the nuclear issue. The IAEA wanted to preserve continuity of safeguards via existing monitoring systems at the Yongbyon nuclear sites; resolve the discrepancies as to past plutonium reprocessing; monitor the announced shutdown of the DPRK’s research reactor in May; and assert the continued validity of the 1977 pre-NPT ratification inspection agreement with the DPRK, should the latter act on its announced withdrawal from the NPT in June (Wit et al. 2004: 43). Each of these objectives was an excellent target for DPRK attack to increase pressure on the United States.

Thus, Pyongyang did not accept or reject the IAEA’s new category of inspections aimed at preserving the ‘continuity of safeguards’ that were not ad hoc, regular, or special inspections. Instead, it invited the inspectors back and proposed a meeting to discuss these inspections beforehand while informing the IAEA that the research reactor de-fuelling – which US negotiators had told the DPRK was the most critical step to avoid – had been postponed. On 10 May, the IAEA’s fourth inspection in the DPRK began, and Pyongyang cooperated in ways indicating that it intended to keep open the option of return to the NPT/IAEA fold even if it actually withdrew from the NPT on 12 June. Thus, to
Wit et al., the DPRK treated the IAEA as a ‘calibrated means’ to shape how the United States would approach the DPRK on the nuclear issue (Wit et al. 2004: 45). In that sense, therefore, the IAEA was peripheral to the main game for Pyongyang – which had always been to engage Washington.

Faced with the prospect of the DPRK’s breakout from the NPT, the Clinton administration was forced to elevate the issue in its internal decision-making, including special staffing led by Robert Galluci. Washington shifted its emphasis from making the DPRK admit its past reprocessing to the IAEA to pushing Pyongyang to comply with the still binding inter-Korean Denuclearization Declaration. But even as the United States offered a permanent end to Team Spirit and support for a Korean nuclear-free zone, the DPRK began to argue that US extended deterrence to the ROK was now an issue (Wit et al. 2004: 47–9).

On 2 June bilateral talks began aimed at averting the DPRK’s pending NPT withdrawal. Pyongyang’s lead negotiator Kang Sok Ju proposed that, rather than returning to the NPT, the DPRK would implement the Denuclearization Declaration and dismantle its fuel cycle in return for the provision of light water reactors (Wit et al. 2004: 51). As US negotiators noted at the time, it was evident that obtaining some form of security guarantee was Pyongyang’s highest priority (Wit et al. 2004: 57).

By 11 June 1993, the day before the DPRK’s ninety-day withdrawal period was up, the two sides struck a deal that kept the DPRK inside the NPT. The IAEA would implement ‘impartial’ safeguards in the DPRK, and the United States reiterated existing commitments to non-aggression under international law. As tension subsided, the DPRK reduced the volume of its anti-US propaganda and in July returned the remains of US soldiers missing in action since the Korean War. Thus, however clumsy, the DPRK’s threat to withdraw from the NPT with its implicit nuclear threat to the United States and its allies forced Washington to negotiate and address Pyongyang’s security concerns. The DPRK thereby turned the tables on the United States, which was more used to wielding the nuclear bludgeon against small, non-nuclear states than being on the receiving end.

As the NPT withdrawal crisis subsided, the two arch-adversaries continued to talk about the specific terms of the 11 June bargain. The DPRK was willing to trade its nuclear programme for light water reactors, and agreed that the IAEA could visit suspected sites but not conduct special inspections. It also committed itself to implementing the Denuclearization Declaration (which includes an inspection arrangement), but then demanded that the United States commit itself to providing light water reactors, rather than merely discussing this option – at which point the negotiations came close to total collapse. Galluci indicated that the United States would ‘support’ the introduction of light water reactors to the DPRK, and the DPRK suggested that it would then consult the IAEA with regard to how safeguards would be implemented to the Agency’s satisfaction. Thus, by July 1993, the two antagonists had already defined the broad shape of the US–DPRK Agreed Framework that was to be finalized in October 1994 after Jimmy Carter’s crisis-driven visit to Pyongyang in July 1994 (Wit et al. 2004: 71–4).
The next twelve months were spent in endless manoeuvring for tactical advantage by Pyongyang, and attempts by Washington to avoid ‘front loading’ the benefits to be provided to the DPRK in any deal. The IAEA’s ‘continuity of safeguards’ became a splendid opportunity for the DPRK to split hairs instead of atoms, enraging the Agency and keeping the United States locked into a tactical duel. The DPRK insisted that any IAEA inspections must flow solely from the bilateral US–DPRK talks, not its NPT/IAEA safeguards obligations, whereas the IAEA argued the opposite, seeking to link the two and to expand the scope of the otherwise undefined category of inspections for ‘continuity’ (Wit et al. 2004: 80).

As stop–start inspections continued in August and the Board of Governors met in September, the DPRK knew that if the IAEA declared that continuity was broken, that would undercut US diplomacy; but if it delayed such a declaration, then restoring it would require even more intrusive inspections, not less, as demanded by Pyongyang. Thus the IAEA had little leverage and allowed its disdain for the DPRK to become apparent to the entire world. To many, it seemed that the IAEA, or at least a significant fraction of its member-states and officials, preferred that the DPRK should remain outside the NPT/IAEA system altogether, rather than dilute the system itself in order to accommodate the DPRK.

With continuity deadlines looming, the United States and the DPRK resumed talks in New York, with the former seeking a nuclear freeze, expanded IAEA inspections and North–South dialogue, whereas the latter wanted first and foremost to end the Team Spirit exercise in South Korea in return for minimal inspections and eventual resumption of North–South Korean talks. Finally, on 19 December 1993, the United States and the DPRK reached agreement on resumption of inspections with simultaneous North–South talks and suspension of the Team Spirit exercise, but leaving unresolved the scope of the IAEA inspections.

In early 1994, the deteriorating situation led the United States to try a private presidential intermediary to communicate directly with DPRK President Kim Il Sung, in the person of evangelist Billy Graham. The result of this and other similar messages was that Pyongyang accepted all measures proposed by the IAEA in February, but when the inspections began, the DPRK stopped inspectors from taking samples or allowing gamma mapping at the reprocessing facility. By now it was clear to US negotiators that insisting on special inspections could lead to the DPRK withdrawing from the NPT and making nuclear weapons in short order, or to war, and was therefore unrealistic (Wit et al. 2004: 140). In March, the IAEA inspectors withdrew from the DPRK to prepare for a Board of Governors meeting on the twenty-first of that month, at which time Blix declared that continuity of safeguards was not broken but that the Agency could not conclude that no fissile material had been diverted as the inspectors’ access to the reprocessing plant had been blocked by the DPRK.

The DPRK escalated by threatening to de-fuel the research reactor without IAEA inspectors present (see Wit et al. 2004: 172). Now the issue that generated
heat between the IAEA and Pyongyang was how to remove and segregate fuel rods so as to preserve the record of past plutonium production in the reactor core. Unwilling to allow the inspectors to do more than merely monitor the unloading, the DPRK began to de-fuel the reactor, which forced the IAEA to send inspectors to attend on Pyongyang’s terms. Any prospect of US–DPRK talks resuming evaporated, and on 30 May the UN Security Council called on the DPRK to preserve the physical record of past nuclear activity and for Pyongyang and the IAEA to consult with each other immediately (Wit et al. 2004: 187).

On 2 June, Hans Blix declared that the way in which the DPRK had de-fuelled the reactor had destroyed its history of operation (although in reality there are other ways of determining the operating history of a graphite moderated reactor). Any prospect for further cooperation had come to an end. Instead, there was talk of sanctions and war. The IAEA took a final parting shot on 10 June, when it approved cutting off non-medical technical assistance to the DPRK. Thereupon Pyongyang announced it was withdrawing from the IAEA and threatened to expel the IAEA inspectors from Yongbyon.

Faced with a free fall towards war, former President Jimmy Carter embraced Kim Il Sung on 17 June 1994 on a private visit to Pyongyang approved by the White House. After announcing on CNN that sanctions would not work, Carter outlined the essence of the deal that was to become the US–DPRK Agreed Framework of October 1994. In return for the US promise of normalization of relations and a set of sequenced energy and nuclear cooperation measures, the DPRK undertook to immediately restore continuity of safeguards and to freeze and then dismantle all its nuclear facilities.

Months of negotiations between Galluci’s team and the North Koreans ensued over how to interpret and implement an agreement based on the Kim–Carter formula. The action shifted almost completely away from the IAEA, to intense discussion as to what packages of assistance would be provided in return for what set of sequenced actions by Pyongyang to prevent production of more plutonium, to dismantle the DPRK’s nuclear fuel cycle, to implement IAEA safeguards and the Denuclearization Declaration, and last (if not least for the Americans), how to preserve the past history of reprocessing by deferring special inspections until such time as the nuclear steam supply system of the light water reactors to be delivered as part of the deal were ready for shipment to the DPRK.

Although the IAEA played no role in these negotiations, niceties were observed. Rather than referring directly to special inspections in the Agreed Framework, Galluci consulted Blix, who preferred that the IAEA should decide what the DPRK had to do to satisfy the IAEA when the time came (Wit et al. 2004: 309). The IAEA also gained a new mission of monitoring Pyongyang’s compliance with the nuclear freeze, a role mandated in November 1994 by the UN Security Council, which requested that the IAEA undertake to re-establish ‘continuity of safeguards’. In turn, the IAEA played an important political role by undertaking and defending this mission in public, thereby allaying the
concerns of hawks who feared that Pyongyang would cheat on this agreement and who worried about precedents set by any accommodation of the global NPT regime to DPRK non-compliance.

By the end of 1994, the DPRK had managed to build an almost complete nuclear fuel cycle, including an operating nuclear reprocessing plant at Yongbyon. The IAEA’s forensic chemistry had alerted the international community to the possibility that the DPRK had conducted multiple reprocessing campaigns, and could by that time have already separated up to two weapons’ worth of plutonium from the research reactor (Albright and O’Neill 2000). But the United States and the IAEA had come to terms with deferring resolution of past discrepancies while placing first priority on stopping additional plutonium production in the DPRK – a position advocated most strongly by the military in the US administration’s internal debates. In short, the NPT/IAEA regime adjusted to the DPRK’s bottom line, which was to retain up to two nuclear weapons’ worth of plutonium, not the other way around.

The Clinton administration took a different tack from that of the Bush Sr administration. Instead of relying on a third party to pressure the DPRK to change its behaviour, Clinton dealt directly with Pyongyang. After an initial learning period, Clinton put diplomacy in the driver’s seat, backed up by carefully calibrated economic and military pressure, including detailed preparations for a military strike on the Yongbyon facilities that embodied the new counter-proliferation concept at the Pentagon (see Perry and Carter 1999).

The tentative cooperative engagement represented by the energy cooperation projects implemented by the Korean Peninsula Energy Development Organization (KEDO) supplanted the notion that North Korea somehow could be forced to fulfil its NPT and IAEA obligations. Thus the US–DPRK Agreed Framework was a stopgap measure and did not address directly the strategic motivation of the DPRK leadership – the need for a security relationship.

For Pyongyang, the most important aspect of the Agreed Framework was not energy assistance via KEDO, but the prospect of normalized relations with the United States and the guarantee that the United States would provide a negative security assurance when North Korea came back into NPT/IAEA compliance. Since the DPRK remained an ally of nuclear-armed China (although its alliance with the former Soviet Union had been summarily terminated by the Russian Federation), it remained subject to the threat of US nuclear attack, regularly planned and exercised in various branches of the US military (see Kristensen 2001).

By 1998, both the DPRK and the United States were unhappy with the slow implementation of each other’s commitments in the Agreed Framework. Prompted by the August 1998 test-firing of a DPRK rocket above Japan, Washington initiated the ‘Perry process’ to realign the DPRK-related cooperation between United States, South Korea and Japan as well as to shore up domestic support for the Agreed Framework. In addition to coordinating US and allied strategy, Perry set out to restore the convergence of US and North Korean strategic intentions and actions, both of which had strayed some distance from the sequential and reciprocal steps contained in the Agreed Framework.
The DPRK argued relentlessly that the IAEA was back in the DPRK solely in order to inspect its compliance with the nuclear freeze provisions of the US–DPRK bilateral Agreed Framework. It was clear that Pyongyang viewed the IAEA simply as a way to put pressure on Washington, declaring that: ‘Whether we implement the safeguards accord with the IAEA entirely depends on how the US implements the framework agreement with the DPRK’ (KCNA 1998).

The Clinton administration made a last-ditch attempt to resolve the conflict by signing an agreement to end hostility between the United States and the DPRK. According to the US–DPRK 12 October 2000 joint statement issued in Washington: ‘As a crucial first step, the two sides stated that neither government would have hostile intent toward the other and confirmed the commitment of both governments to make every effort in the future to build a new relationship free from past enmity’ (US State Department 2000a). Perry’s groundwork made it possible for then US Secretary of State Madeleine Albright to visit Pyongyang in 2000 to try to achieve a breakthrough on missiles and nuclear weapons. She met with Kim Jong Il, who struck her as being ‘someone who is practical, decisive, and seemingly non-ideological’, but the results of the visit amounted to too little, too late, for both sides. The Clinton administration had simply run out of time to explore whether cooperative engagement and reassurance might move the DPRK to abandon nuclear-weapons development (US Department of State 2000b).

Key officials in the Clinton administration believed that time was on the side of the United States, and that Pyongyang’s strategic motivation did not matter – US policy simply had to achieve US goals whatever reasoning prompted the DPRK to pursue nuclear weapons, whether the latter was strategic, venal or the result of madness or confusion (Wit et al. 2004: 382). Unfortunately, Pyongyang’s objectives did matter. Frustrated at its inability to move the United States from its unremitting hostility, the DPRK began to pursue uranium enrichment technology more actively in 1998, thereby setting in motion an unconstrained second pathway for obtaining nuclear-weapons technology (US Central Intelligence Agency 2002).

Although the DPRK had signalled that it was ready to transform its absolute antagonism to the United States into a security relationship, including entertaining at the highest level that US military forces might stay in Korea on a ‘non-partisan’ basis, it was increasingly restive. The United States was plainly not interested in shifting from humanitarian food aid to development assistance, and continued to designate the DPRK as a ‘terrorist’ state, thereby effectively blocking all but the most risk-taking Western firms from doing business there. De facto, therefore, the United States was applying economic pressure on the DPRK to capitulate on the nuclear issue and other issues such as missile exports – and this proved to be a sure-fire exercise in non-proliferation failure.

**Bush Junior: malign neglect and rollback**

In March 2001, shortly after taking office, President George W. Bush met with ROK President Kim Dae Jung and told him directly that he did not agree with
the latter’s assessment of Kim Jong Il as someone with whom one could do business (see White House Press Office 2001). Many observers viewed this as insulting to South Korea and evidence of a careless ‘cowboyism’ that undermined US leadership of its erstwhile ally (Wilkerson 2005).8

This opening salvo across South Korea’s bow was followed by twelve months of malign neglect during which the United States reluctantly delivered heavy fuel oil as required by the Agreed Framework and allowed the light water project to proceed, but otherwise sat on its hands in terms of fulfilling US commitments. In October 2002, the administration sent diplomat James Kelly to Pyongyang, where he informed the DPRK that its uranium enrichment programme rendered the Agreed Framework defunct and demanded that the DPRK admit to this activity.9 The DPRK first rejected Kelly’s claims altogether, and then reactivated its plutonium-producing fuel cycle after the United States ended heavy fuel oil deliveries. However, it allowed US nuclear experts who were involved with spent fuel canning under the Agreed Framework to stay until late December 2002. Citing US nuclear pre-emptive targeting of the DPRK, Pyongyang also evicted IAEA inspectors, arguing that they were only in the country by virtue of their role in monitoring the DPRK’s nuclear freeze in the 1994 US–DPRK Agreed Framework. As one German commentator noted trenchantly, the DPRK was dancing a nuclear solo striptease act aimed at getting US attention, and tweaking the IAEA was the perfect ploy for unveiling its nuclear intentions (Bork 2002).

From the outset, the Bush administration was deeply divided internally over how to manage the DPRK nuclear threat. This ‘bipolar disorder’ in the Bush White House mirrored the earlier split during the Clinton administration between advocates of immediate freeze and dismantlement who supported reassurance and cooperative engagement with the DPRK versus non-proliferationists who held that the only acceptable way forward was immediate DPRK compliance with its non-nuclear obligations. In the Bush White House, the split revolved around ultra-hardliners who argued that the DPRK leadership was always hell-bent on obtaining nuclear weapons, would never give up its nuclear capacities, and was secretly pursuing them anyway – that is, lead with a stick and endure the regime until it collapses – versus hardliners who believed that it was still possible to negotiate a reversal of Pyongyang’s nuclear programme at an acceptable cost – that is, lead with carrots but carry a big stick (Hayes 2003a).

The terrorist attacks of 11 September 2001 on the United States led to the prosecution of the global war on terror, and the occupation of Iraq because of its alleged nuclear-weapons capacities. Thus the ‘ultras’ became dominant at a critical juncture in relation to Korea. Bush listed the DPRK as one of three rogue states that could be dealt with only by isolation, pressure and, by implication, by ‘regime change’. In one interview, he even called Kim Jong Il a ‘pygmy’. The US military reinvigorated its nuclear doctrine by updating the ‘adaptive planning’ created after the collapse of the Soviet Union with pre-emptive nuclear strike options aimed at rogue states, rogue leaders and even non-state actors who
might pose a threat of WMD against US or allied targets (see Arkin 2002; Ruppe 2005).

The response of the Bush administration, already consumed with the global war on terror and the escalating costs of the occupation of Iraq, was to launch in April 2003 multilateral negotiations involving the two Koreas, Russia, Japan, China and the United States, hosted by China. By December 2005, four rounds of these six-party talks had failed to deliver any concrete commitment by Pyongyang to reverse its nuclear-weapons programme. Instead, faced with US obstinacy, the DPRK escalated first by hinting, then declaring with increasing volume, that it had made weapons-grade plutonium metal (even handing a leading US nuclear-weapons expert a chunk of the metal to examine in January 2004) and averring that it had ‘weaponized’ this material (see Hecker 2005). For its part, the United States continued (as of September 2006) to refuse to engage the DPRK on a bilateral basis, insisting that China and the other regional powers should wrestle the DPRK to the ground on the nuclear issue.

Faced with the virtual abdication of the US superpower in dealing directly with the DPRK, regional states began to cut their own deals with Pyongyang. The nascent strategic bifurcation of North East Asia into a China-led bloc including the two Koreas and a countervailing US–Japan bloc became apparent in 2005. The refusal of the United States to lead, its increasingly unilateral actions in the war on terror and its insistence on faux diplomacy by insisting on the form of the Six Party Talks without any real content in 2003–05 may prove to have been the low point in the decline of US nuclear hegemony. For the regional powers, it was obvious that the United States had no genuine intention of achieving the denuclearization of the DPRK, and no coercive capacity to impose it either.

For its part, by mid-2005 the DPRK had thrown out IAEA inspectors, broken the seals on the spent fuel stored at Yongbyon and reprocessed that spent fuel, thereby acquiring perhaps eight to ten nuclear weapons’ worth of fissile material. In February 2005, it declared outright that it had constructed nuclear weapons; and on 31 March, Kim Il Sung was cited as blessing Pyongyang’s nuclear deterrent strategy as the way to achieve denuclearization of Korea in DPRK domestic propaganda, thereby fusing North Korean nationalism with nuclear weapons (Institute for Science and International Security 2005; Korean Central Broadcasting Station 2005). The DPRK demanded co-equal treatment from the United States as a nuclear-weapons state.

Thus the core deal underlying US nuclear hegemony – that it would stop proliferation of nuclear weapons by adversaries of US allies on the one hand; and between NWS that it would not foster the spread of nuclear weapons among such key US allies as Germany and Japan on the other – had all but failed. By 2006 it was clear to all parties to the Korean nuclear conflict that the United States was strategically adrift in the region. The Bush administration’s last hurrah has been to try to press the Kim regime to capitulate on a range of peripheral matters such as narco-criminal and counterfeiting issues, but even this strategy seems to be backfiring, as it is forcing the rapidly expanding legitimate trade
in North Korea into corruptible channels rather than getting Pyongyang back to the Six Party Talks. Since the end of 2005, the United States has imposed financial and shipping sanctions, and is now attempting to squeeze the DPRK leadership into submission or into collapse.

NPT withdrawal pains

The DPRK’s NPT withdrawal directly attacks the basis for US nuclear hegemony which rests upon its ability to keep states in the NPT/IAEA system or to enforce compliance should a state break out of the system and proliferate nuclear weapons.

The DPRK’s non-compliance with IAEA safeguards agreements and its subsequent withdrawal from the NPT raise formal and substantive legal and political questions for the NPT and the IAEA. First, the basis for its declared withdrawal on 10 January 2003 without ninety days’ notice was that it had already given this notice in 1993 and had run down the clock at that time to eighty-nine days before suspending its withdrawal in June 1993 (du Preez and Potter 2003). The DPRK argues that it had a special status in having not retracted the original withdrawal, basically being in limbo, and therefore could simply give one day’s notice.

Analysts noted that, once Pyongyang had linked its withdrawal to the earlier notice, the legal basis for the final withdrawal also therefore rested on the original grounds, not the issues that the DPRK cited as motivating its actions in 2003. The original grounds were objections to US military exercises threatening the DPRK, and the IAEA inspector’s demands for special inspections-related access, and the allegedly partisan basis of the IAEA’s demands that the DPRK comply with its safeguards obligations (Bunn and Timerbaev 2005).

Although the IAEA did refer the DPRK’s non-compliance on safeguards to the UN Security Council, Pyongyang’s NPT withdrawal was and is not an issue for the IAEA. UNSC action on this score rests on general Security Council mandates related to the maintenance of international peace and security and threats arising from prospective or actual proliferation of nuclear weapons, rather than non-compliance with the NPT itself.

Towards the end of 2006, however, the Security Council has yet to act in a way that holds Pyongyang to fulfil its NPT obligations, a repeat of its 1994 deliberations on the DPRK. In effect, it has been left to the withdrawing state, that is, to the DPRK, to define what constitutes ‘extraordinary events, related to the subject matter of this Treaty, [that] have jeopardized the supreme interests of its country’ (Article X of the NPT). Part of the UNSC responsibility faced with a declared intention or actuality of withdrawal is to consider the possibility of alternative measures short of withdrawal to address and resolve the circumstances cited by the withdrawing party.

This is particularly incumbent on the Security Council when the justification cited or the extraordinary circumstances derive from a threat projected by the nuclear weapons of a UNSC member-state (the United States), as was the case
with the DPRK, which, in its withdrawal notice to NPT member-states, declared that its withdrawal from the treaty was due to its being designated by the United States as part of the ‘Axis of Evil’ and being targeted by the US pre-emptive strike policy – both of which are true (see du Preez and Potter 2003). The Security Council completely failed to address this core issue, which is at the basis of the deal between nuclear weapons and non-nuclear-weapons states that are party to the NPT.

Assessing nuclear intentions

Three US administrations have failed to avoid North Korean breakout from the Non-proliferation Treaty and a gaping hole in the IAEA safeguards system. Nuclear war is once again conceivable in Korea after a brief interlude in the early 1990s when this prospect all but disappeared. Even South Korea – thought to be squeaky-clean in terms of IAEA safeguards and non-nuclear credentials – proves to have continued to acquire its own nuclear weapons-related enrichment and other capacities in apparently uncontrolled scientific research throughout the 1990s and ending only in 2003 (Hayes et al. 2005a).

In light of this dismal record, two questions need answering. First, why did US nuclear hegemony fail so completely to curtail Pyongyang’s nuclear challenge? Second, was this outcome inevitable, or are there lessons from this decade of nuclear confrontation that might lead the DPRK to abandon its nuclear weapons?

After the fourth round of Six Party Talks, the DPRK lambasted Washington’s intentions but also reaffirmed that it wants to build confidence with the United States (via concrete measures such as US provision of light water reactors) and to shift from hostile relations to coexistence if not friendly relations (Hayes et al. 2005b: appendix 2).

To most US policy-makers, such DPRK claims to be recognized as an equal partner and to be willing to move from a hostile to friendly relationship at this late stage seem preposterous, and are discounted as bizarre. Some view it as impossible for the DPRK to make such a move due to the state’s alleged narco-criminal character (see Chestnut 2005; Asher 2005). Others believe that the ‘simplest’ explanation of Pyongyang’s behaviour – that the leadership has and always will put acquiring a strategic nuclear arsenal first and foremost in its priorities – is preferable until proven otherwise (Eberstadt 2004). Such analysts simply ignore any anomalies that are inconsistent with this approach or that indicate that DPRK motivations may be more nuanced and conflicting. Yet other analysts view statements from senior party figures, and even from Kim Jong Il himself, to the effect that a non-partisan US military might stay in Korea, as totally incredible and purely tactical in nature, aimed at splitting US alliances with South Korea or Japan. As one former US official who met with Kim Yong Sun put it, there may be less to this North Korean position than meets the eye.

It is useful, therefore, to return to the fundamental question of North Korean motivations in obtaining nuclear weapons. North Korea has not enunciated a
nuclear doctrine for its claimed nuclear weapons. Translating an inferior and relatively tiny nuclear-weapons arsenal of untested reliability into political and military terms may prove difficult. North Korea is not the only NWS (assuming its claims to have nuclear weapons are true) to face the daunting problem of converting a fourth-rate nuclear force into the currency of power and capacities in a way that can actually strengthen the regime once the first flush of nationalist pride wears off. Arguably, India faces a similar problem.

Yet Pyongyang’s slow-motion proliferation is not easily explained by the theories that it is simply intent on gaining nuclear weapons, or that it was induced to delay this programme by a relatively small pile of carrots under the Agreed Framework. The US ability to coerce the DPRK on objective power ratios has increased with time, not decreased. Pyongyang had nothing to gain by delaying its proliferation efforts by nearly a decade under the Agreed Framework, and there was little or nothing that the United States could have done in the mid-1990s to stop it. Thus, an alternative explanation is in order.

In my view, the DPRK used nuclear threat as a form of compulsion of its own, to force the very much larger nuclear power, the United States, to engage it on critical security and regime survival issues. Such threats have been left deliberately ambiguous and its capacities to act on these implicit and explicit threats remain very opaque and uncertain. However, it is clear that the DPRK could threaten vital US interests with a nuclear weapon on the brink of a war in Korea, either directly in Korea or in Japan, or even against the United States itself.

It also plays on the fear, linked for many to the post-9/11 mentality, that the DPRK might sell nuclear materials or even whole weapons to other states or to non-state terrorist organizations (Hayes 2003b). In the case of the DPRK, the nuclear weapon is a weapon of the weak and the desperate, but one with a very unusual levelling capacity due to its exceptional power. Given the rigid and tenacious US stereotypes about the DPRK’s inability to change from a nightmarish child of the Cold War into something more compatible with post-Cold War international norms of state behaviour, Pyongyang used the nuclear threat to batter away at the American door.

This challenge to nuclear inequality goes to the heart of the Nuclear Non-proliferation Treaty. As Kim Yong Sun, then in charge of nuclear strategy in the Korean Workers’ Party, explained to me in Pyongyang in 1991:

I’d like to compare the need for discussion between ourselves and the United States on the nuclear issue with two people sitting at a table, one wearing a big visible knife and the other unarmed. Is it acceptable for the armed one to demand inspection of the pockets of the unarmed one? We see that this is a superpower demand on a non-nuclear small country to be imposed unilaterally... There might be big and small nations, but there can’t be superior and inferior nations. There might be developed and developing countries, but there can’t be dominating and dominated countries.12

(Hayes 1991)
The DPRK has sought to use nuclear weapons not only to counter the US nuclear threat and other interrelated insecurities derived from the Korean division and war, a typical negative use of nuclear weapons. Pyongyang has also tried to gain a security relationship with Washington, due to its perception that it needs distant great-power allies to offset the proximate power of Japan, China and Russia; and because it wants to avoid being crushed by South Korea, which is twice as large in population and fifty times bigger in terms of its economy – and which has already been recognized by both China and Russia.

This positive use of nuclear weapons by an adversary rather than an ally is incomprehensible to Americans – that the North Koreans could imagine that they could be security partners with the United States. Yet this is what senior North Koreans have consistently said, and there is no reason to disbelieve them. There is no place in US nuclear ideology for an adversary who uses nuclear weapons to try to assert its right to achieve a security relationship with Washington. For this reason, US nuclear hegemonists failed to perceive what the North Koreans were doing, over and over again. Their stereotypes simply precluded this possibility. In my view, they were mistaken in shunning the various overtures from Pyongyang, such as that made by the now deceased party leader Kim Yong Sun, who said in 1993, referring to the need to put aside the profound conflicts dividing North Korea and the United States, ‘It is possible and probable to solve the nuclear issue by this direct dialogue. Koreans have a saying: “Sword to sword: ricecake to ricecake”. It is time to throw away the sword and hold up the ricecake’ (quoted in Hayes 1993c).

Of course, there are other reasons that explain why Americans may not have heard – or believed if they did hear – when DPRK leaders (including Kim II Sung and Kim Jong Il) and diplomats stated that they were attempting to achieve a political breakthrough with the United States as their highest priority. The long stream of DPRK propaganda denouncing the United States in vitriolic terms, the propensity to use endless salami-slicing tactics in negotiations, maximalist demands to retain ‘give-away’ options in last-minute final compromises and Pyongyang’s action–reaction negotiating style, drowned these signals or rendered them incredible to US policy-makers. The harder the North Koreans beat their drums, the more difficult it became to hear what they were saying. The less Americans heard what they were saying, the more the United States responded with classical Cold War deterrence or compellence strategies, except for brief interludes of limited reassurance.

**Conclusion**

Barring a miraculous change in political culture and orientation in Washington and/or Pyongyang, the only way to repair the damage is for an authentically regional system of nuclear non-proliferation to be developed by local states, consistent with the global NPT/IAEA system. Such a system can be attached to the latter, but it must be developed and tailored to the needs of regional states to reduce the nuclear threat emanating from within the region. Over time, such an
approach may render Pyongyang’s nuclear-weapons programme less salient, and
eventually lead to its dismantlement as part of inter-Korean rapprochement.

The obvious starting point for such an approach is to expand the scope and
participation in the existing Korean NWFZ declared in 1992 by the two Koreas
to cover parts of China, the Russian Far East, Japan and Taiwan. At the outset,
this could be as simple as attaching protocols for non-Korean signature to the
Joint Denuclearization Declaration. Over time, other states could partly or com-
pletely accede to the commitments made in that declaration and apply these con-
ditions to part or all of their territory (Endicott et al. 1997; Umebayashi 2004).

In this regard, maintaining the ROK’s non-nuclear commitments is now the
highest non-proliferation imperative in the region. In the interim, it is critical to
ensure that Japan does not seek nuclear weapons in response to a blatant demon-
stration of North Korean nuclear weapons capacity such as a nuclear test. In
both instances, the role of independent policy analysts and the emergence of
more influential civil society organizations may prove to be the essential missing
ingredient for reinstating the non-nuclear status of these countries, currently
deeply implicated in the nuclear alliance system and complicit in the US nuclear
hegemony.

Finally, the impact of the North Korean breakout on US nuclear hegemony –
built around the core deal that extended nuclear guarantees to allied states
against nuclear threats from nuclear great powers, and promised to halt the
spread of nuclear weapons to local enemies – is devastating. Many Americans
still manage to delude themselves that the Six Party Talks somehow represent a
masterpiece of US diplomacy that facilitated the ‘coming out’ of China as a
responsible regional power. Some have even speculated that these talks might
lay the foundations for a regional institutional framework for managing security
issues.13

In reality, nothing could be further from the truth. The reputation of the
United States as a superpower and nuclear hegemon lies in tatters in East Asia.
In effect, the United States has abdicated from its hegemonic role, and left the
locals to fend for themselves. Not surprisingly, they are doing so, and nowhere
more so than in South Korea, now determined to stabilize nuclear-capable and
possibly nuclear-armed North Korea, and to diversify its great-power interde-
pendences away from almost sole reliance on the United States. Military pro-
curement in South Korea now includes substantial purchases from the Russian
Federation, much to the chagrin of US arms manufacturers (Sanzhiev 2005).

Does it matter that a small hermitic state with almost no awareness of or
commitment to international norms of political and interstate behaviour has
nuclear weapons? Leaving aside the global cost of establishing that states not in
compliance can get away with pulling out of the NPT, and ignoring the cost of
on-going division and instability in Korea to Koreans and non-Koreans alike – a
nuclear North Korea increases the risks of nuclear next-use in the coming
decades.

The first question that must be addressed concerns motivation. If the DPRK
has become a nuclear ‘stalker state’ that seeks to redress past wrongs and use
nuclear leverage to force the United States to treat it in a less hostile and more respectful manner, then the United States will have to ask itself whether continued isolation and pressure on the regime are more likely, or less so, to ameliorate stalking behaviours in time of crisis, when the risk of nuclear next-use becomes urgent. Like a repeat offender, the DPRK is likely to continue to use nuclear threat to stalk the United States until it achieves what it perceives to be a genuine shift in Washington’s attitude. Unlike an individual who stalks, there is no simple way to lock up a state that stalks another with nuclear threat.

Currently, the United States has no common language for discussing nuclear weapons with the North Korean military in the context of the insecurities that bind the two sides together at the Demilitarized Zone. Continued rebuffing of Pyongyang’s overtures may lead to more ‘nuclear stalking’ – that is, the development of creative and unanticipated ways of using nuclear threats, deployments and actual use in times of crisis or war. There are no grounds to believe that the DPRK will employ a US or Western conceptual framework of nuclear deterrence and crisis management in developing its own nuclear doctrine and use options. Indeed, US efforts to use ‘clear and classical’ deterrent threats to communicate to North Koreans that ‘if they do acquire WMD, their weapons will be unusable because any attempt to use them will bring national obliteration’ – as Condoleezza Rice put it in her Foreign Affairs essay (Rice 2000) – serve to incite the DPRK to exploit this very threat as a way to engage the United States, with terrible risks of miscalculation and first-use on both sides.

In fact, the scenario of nuclear next-use in Korea that is most worrisome is not the result of war involving the United States with its allies, and the DPRK: rather, it involves the consequences of the DPRK falling into a state of war with itself. Should the DPRK collapse violently, then its nuclear weapons or fissile material might be commandeered either for provocative use in order to draw the ROK into such a war by one or other faction in the DPRK, or simply spirited out of the country by the residual narco-criminal networks operating out of the DPRK and become available to another proliferating state or a non-state actor with nuclear aspirations. For this reason alone, it is urgent that the international community cooperate to stabilize the political and economic situation of the North Korea. Such is the awesome power of nuclear weapons that there is no alternative.

Notes

1 Wit et al. 2004 note that a US satellite first monitored construction of the 5MW reactor in 1980. See also CIA 1986 which states that ‘Whether the current nuclear developments in North Korea reflect a nuclear-weapons programme, they represent a considerable developing capability’, p. 15.
2 Author’s communication with D. Fischer, 17 November 2005.
3 As stated by a North Korean official to the author and recounted in Hayes 1993d.
4 Recount by a defector. This defector’s account of Kim Yong Sun’s role, the decision-making process, and the strategic motivation of Kim Jong II and the role played by Kim Yong Sun, accords with what I was told privately by senior North Koreans in Pyongyang in 1991 and 1992.
The authors state that the DPRK used the IAEA as a calibrated means to ‘shape the political environment’. I interpret the latter phrase to mean how the United States responded to the DPRK.

The full text of the US–DPRK Agreed Framework and all the related agreements to implement it can be found in Hayes and Kihl 1997 and at www.nautilus.org/DPRKBriefingBook/agreements/index.html.

According to Wit et al., they were agnostic as to DPRK strategic motivation; to them, all that mattered was that the United States should realize its strategic objectives.

See the devastating account of this meeting by Colin Powell’s former chief of staff (Wilkerson 2005).

Kelly informed the DPRK that its uranium enrichment programme rendered the Agreed Framework defunct and demanded that the DPRK admit to this activity. However, no affirmative evidence has been tabled regarding such HEU activities.


In my view, this is extremely unlikely.

Briefing from an interview with Kim Yong Sun, chairman of the Korean Anti-Nuclear Peace Committee and International Affairs Department of the Korean Workers’ Party and the International Affairs Committee of the DPRK Supreme National Assembly, Pyongyang, 1 October 1991.

See e.g. Schoff et al. 2004.
Various Nuclear Weapon-Free Zones (NWFZ) exist, and their contribution to regional and international security has been widely acknowledged. However, no NWFZ has been established in a region that includes the territory of any of the five weapons states that are party to the Treaty on the Non-proliferation of Nuclear Weapons (NPT) as well as the three states – Israel, India and Pakistan – that are not.

The obvious reason for this is that not one of these eight states has agreed to relinquish its nuclear weapons. Moreover, the prospects for this happening in the foreseeable future are unlikely, despite the NPT Article VI commitment to disarmament by the five NPT weapons states, as well as occasional statements by the three non-NPT weapons states about the desirability of a nuclear weapons-free world. Indeed, there is almost no discussion of pursuing an NWFZ in any region that includes a nuclear-weapons state – except in the Middle East, where it has been on the international diplomatic agenda since 1974, when Iran, supported by Egypt, introduced a resolution in the UN General Assembly supporting the creation of such a zone.

Israel joined the consensus on this resolution in 1980, and supports the concept of an NWFZ rather than the Non-proliferation Treaty (NPT) as the appropriate vehicle for denuclearization in the Middle East. However, Israel has refused to begin negotiations towards creation of an NWFZ until a just and comprehensive peace is established between it and the Palestinian people as well as neighbouring states. At the moment, this seems a distant prospect, which has led to considerable scepticism about the utility of discussions about an NWFZ in the region, especially in the face of widespread concern that Iran is attempting to acquire nuclear weapons under the cover of a civilian nuclear programme.

An additional complication in realizing an NWFZ in the Middle East is the fact that many countries in the region are suspected of possessing chemical and biological weapons. While the lethality of such weapons is rarely of the same order as that of nuclear weapons, they can cause significant casualties among unprotected military formations and civilian populations, and thus they must also be accounted for in any attempt to rid the region of nuclear weapons. This motivated President Mubarak of Egypt to propose a Weapons of Mass Destruction Free Zone (WMDFZ) in the Middle East in 1990. This proposal has
received rhetorical support in the international community – as in UN Security Council Resolution 687, which ended the Gulf War in 1991. However, it has made no real headway, primarily because some Arab states (Egypt in particular) have linked their signing of the Chemical Weapons Convention (CWC) and ratification of the Biological Weapons Convention (BWC) to Israeli accession to the NPT.

Thus, while all WMD in the Middle East should be eliminated, making progress on the nuclear dimension is a central and daunting task. Moreover, given that the attention of the international community is now focused on the Iranian nuclear problem, consideration of an NWFZ – or indeed of any arms control measure not directly relevant to the solution of this problem – risks becoming an academic exercise. However, we believe that the converse is also true: the Iranian problem in particular and the larger problem of halting further proliferation in the Middle East can be solved only in the context of further progress towards the establishment of an NWFZ in the region. For this reason, we disagree with the view that consideration of such a zone should be relegated to the diplomatic ‘back burner’ in favour of an exclusive focus on Iran, without any reference to the possession of nuclear weapons by Israel or indeed by all the current nuclear-weapons states.

Those who strongly oppose Iranian attempts to acquire dual-use nuclear technology while acquiescing in the nuclear reality in Israel have responded to the charge that this constitutes a ‘nuclear double standard’ by arguing that a non-proliferation policy that accounts for the historical context as well as the nature and actions of regimes is justified. This is an argument that merits careful scrutiny, and we will consider it next before elaborating on our previous proposal that a step-by-step approach that links incremental progress in arms control to incremental progress towards peace in the Middle East is the logical path towards the eventual realization of an NWFZ (Miller and Scheinman 2005: 29–33).

We also review the modalities of and the experience gained with existing NWFZs, because even interim arms control measures must deal with zonal issues such as how to verify the obligations of the parties. The African NWFZ in particular is a useful precedent to a possible NWFZ in the Middle East, as the former could not be established until an existing nuclear-weapons state in the region relinquished these weapons. We end by summarizing our major conclusions and recommendations.

A ‘nuclear double standard’?

Given the close relationship between the United States and Israel, including their common perspective on the need to retain nuclear weapons for the foreseeable future while denying them to their enemies by all means necessary, it is not surprising that the United States has acquiesced in the possession of nuclear weapons by Israel while strongly opposing their acquisition by other states in the region, Iran being the most prominent example today (Steinberg 2004). Of
course, such a double standard is inherent in the NPT itself, and, official rhetoric aside, it seems clear that the NPT weapons states have no intention of completely eliminating their nuclear weapons in the current international security environment (Deutch 2005: 51). And this holds true also for the three de facto non-NPT nuclear-weapons states which, moreover, have no legal obligation comparable to Article VI of the NPT to pursue nuclear disarmament.

Indeed, the United States has acquiesced in the possession of nuclear weapons by all three of these states, the latest evidence being its announced intention of changing its domestic laws as well as international agreements in order to offer full civilian nuclear cooperation to India (McGoldrick et al. 2005). Although there is a legal basis for differentiating between Israel as well as India and Pakistan on the one hand and Iran on the other with regard to possession of nuclear weapons – since the former states have not signed the NPT, whereas Iran has – Washington’s most important consideration in formulating its non-proliferation policy has always been a judgement on the degree to which states with nuclear ambitions are supportive of or pose a threat to US interests.

Given the enduring belief in US exceptionalism, especially in that country during the current Bush administration, it is scarcely surprising that this policy has acquired a ‘moral edge’ in some quarters. For example, in an editorial on the significance of the sixtieth anniversary of the dropping of the first atomic bomb on Hiroshima, the Wall Street Journal comments:

America’s nuclear arsenal helped thwart Soviet expansionism and provided the umbrella under which Western Europe and the Asian rim countries became – and remained – free throughout the Cold War. For embattled Israel, nuclear weapons have not only helped guarantee its existence, they have paradoxically provided it with the margin of strength it needs to contemplate territorial concessions, unimaginable for other states its size.

Of course, for every Pershing missile that helped keep Western Europe free, a Soviet SS-20 helped keep Eastern Europe captive. In the hands of democracies, nuclear weapons safeguard liberty; in the hands of dictatorships, they safeguard despotism. [Emphasis added.] It’s doubtful that the Soviet Union could have survived as long as it did had it never developed nuclear weapons. That’s true for North Korea today, and it explains why the mullahs of Tehran seek to bolster their faltering regime with an atomic bomb.

(‘Hiroshima’ 2005)

A more nuanced perspective on this issue that distinguishes between what might be called ‘bad’ and ‘not so bad’ proliferation on the basis of the nature and actions of the regime in question has been offered by Richard Haas (Haas 2005, see also Walzer 2004):

The United States has also tolerated Israeli nuclear weapons, bowing both to reality but also to a sense that Israel has a claim to such weapons, given the
threats and hostility it has faced from most of the Arab world throughout its entire existence. Although it is right to oppose the emergence of new nuclear-weapons states in all circumstances, it is also right to oppose it more in some than in others. The character and behaviour of the regime – its record of aggression, its history of supporting terrorism, its stability, its record on preventing exports of sensitive technologies, whether it is a democracy, its involvement in a dispute with a neighbour that could lead to a conflict that in turn could involve nuclear weapons – all can and should influence the intensity of what the USA and other countries should be prepared to do to prevent or counter it. While the emergence of a nuclear Iran and a nuclear Switzerland would be of concern, they would not be of equal concern.

In the case of Israel, anecdotal evidence indicates that its leaders, even when faced with a serious military threat from Syria in the 1973 Yom Kippur War, were reluctant to consider the use of nuclear weapons to counter this threat, and that after the war Israel embarked on a nuclear development programme in order to provide more options for dealing with a serious conventional military attack in the future besides the use of counter-value weapons. In addition, its subsequent acquisition of sophisticated conventional arms and investment in defensive means to minimize casualties in the case of chemical and biological attacks reduce the likelihood that Israel will feel the need to use nuclear weapons in the future (Cohen 2000: 121–2; Rabinovich 2004: 269). By contrast, the autocratic nature of the Iranian regime as well as its support of groups such as Hezbollah and Islamic Jihad, which is rooted in the shared view of these groups and Iran’s ruling clerics that Israel is an illegitimate state that has appropriated Arab territory and is an agent of the ‘Great Satan’ (the United States) in the Middle East, needs to be taken seriously, and not only by Israel, in any assessment of the threat posed by potential acquisition of nuclear weapons by Iran (‘Iran leader’s . . .’ 2005).

By this calculus, it is understandable that the United States and other states tolerate the possession of nuclear weapons by Israel, while opposing their acquisition by Iran. However, there remain the risks of inadvertent and accidental use of Israel’s weapons, as well as those of other states (Sagan 1993). Moreover, from an Arab perspective, these weapons, like Israel’s vastly superior conventional forces, are also a potent symbol of its technological edge and ability to dictate the terms of a political settlement, and thus provide an incentive for attempts to break Israel’s nuclear monopoly with unforeseen but possibly dire consequences.

In sum, we believe that the distinction between ‘bad’ and ‘not so bad’ proliferation has moral content, and that the acquisition of nuclear weapons by Iran should be vigorously opposed on these grounds. However, these categories are inevitably subjective, making it difficult to achieve a consensus on measures to derail future and constrain earlier proliferation. And the latter also serves as an incentive for the former, while the dangers posed by possession of any nuclear
weapons, even by – or perhaps especially by – states such as the United States, remain, even though they are not frequently discussed. Thus, the United States has an indispensable role to play in minimizing the perceived military and symbolic value of nuclear weapons and in helping to settle long-standing regional conflicts, especially in the Middle East, so that the incentives to acquire or use nuclear weapons will be significantly reduced. In particular, a process of linking progress towards the twin goals of peace and elimination of all WMD in the region needs to be initiated and actively supported by the United States. In the next section, we discuss what such a process might entail.

**Incremental arms control in the Middle East**

Papers on the prospects for unconventional arms control in the Middle East, particularly nuclear arms control, commonly focus on the need for significant progress towards the goal of a just, durable and comprehensive peace in the region as a precondition for arms control, and the numerous obstacles along the path towards this goal. Steinberg’s perspective is especially gloomy, stressing ‘the barren history of Middle East arms control’ in the context of the long history of conflict between Jews and Arabs in the Holy Land. This pre-dates the existence of the state of Israel and is based on the extreme difficulty, some would say the impossibility, of two peoples with different political traditions, cultural backgrounds and religious beliefs living in peace and equitably sharing land and resources between the Mediterranean and the River Jordan.

We agree that the goal of a just, durable and comprehensive peace in a region free of all WMD will be difficult to achieve. However, this goal will never be realized without incremental progress in both the political arena and in unconventional arms control. We have previously made the case for this proposition:

> In sum, while a WMDFZ in the Middle East remains a long-term goal, the risk of further proliferation in the Middle East is an immediate and serious problem, whose solution depends, *inter alia*, on progress in regional arms control linked to progress in the political arena.

(Miller and Scheinman 2005: 33)

Thus, while we also subscribe to the widespread view that Iranian nuclearization would be a grave danger, we do not believe that this problem can be solved by focusing exclusively on Iran, while relegating other unconventional arms control initiatives in the region to the political back burner.

Rather, a dialogue between the parties needs to be initiated to delineate an agenda of incremental political and corresponding incremental arms control agreements, including confidence-building and security measures (CBSM). In this enterprise, it is both logical and crucial that Egypt and Israel take the lead with the strong support of the United States. Egypt’s supportive role in the Israeli withdrawal from Gaza increases the prospects that the withdrawal will provide momentum towards the creation of a viable Palestinian state, dedicated
to living in peace with Israel. And while the peace between Egypt and Israel may be ‘cold’, it is peace nevertheless, and much can be done to make it warmer, including more substantive political dialogue and economic cooperation.

On the other hand, Egypt has staked out a strong position opposing all WMD in the region, specifically Israel’s nuclear arsenal, and linking its own accession to the CWC to Israel’s giving up its nuclear weapons. However, many Arab states, as well as Iran, have ratified the CWC despite Egypt’s opposition, and its public insistence that Israel join the NPT, most prominently as the prime sponsor of resolutions at UN forums and NPT Review Conferences, is increasingly viewed as ritualistic posturing. And while, unlike Israel, Egypt does not view Iranian nuclearization as an existential threat, it would pose a serious challenge to Egypt’s leadership in the Islamic world.

Thus, there is a ready rationale for Egypt and Israel to engage in a high-level dialogue on the threat of WMD in the region, aimed at coming to an understanding on what is desirable and feasible concerning arms control agreements and their linkage to progress on the political front. The highest priority is reaching a common understanding on the Iranian nuclear problem, but the arms control agenda should also include accession to and strengthening of the CWC and the BWC by all states in the region. In the following, we consider accession to the CWC and BWC as well as a possible solution to the Iranian nuclear problem that synergistically supports progress in both regional and global nuclear arms control.

Although Israel was one of the first countries to sign the CWC in 1993, it has not ratified the convention – primarily because of concerns about the possible abuse of its intrusive inspection system, in particular, calling for a challenge inspection at a known Israeli nuclear site such as Dimona, as well as an unresolved debate about the wisdom of relinquishing the deterrent value of chemical weapons in the absence of a similar decision by Egypt and Syria. Israel has also neither signed nor ratified the BWC, which was opened for signature in 1972 and entered into force in 1975. (The CWC entered into force in 1997.)

Unlike the CWC, the BWC does not have any inspection system, so that the major reason for Israel’s refusal to accede to this convention, beyond its guarded approach to global arms control agreements, presumably concerns the perceived benefit of retaining the option of using biological as well as chemical weapons. Some policy analysts have called upon Israel to follow the example of the United States and seize the ‘high moral ground’ by signing and ratifying both the CWC and BWC while retaining advanced nuclear and conventional forces. However, there has been no movement in this direction because of the highly uncertain nature of future political developments in such key states as Iraq, Iran and Syria and in Israel itself, and the lack of pressure by the United States, which shares Israel’s scepticism about global arms control.

An even darker cloud hangs over Israeli agreement to a Fissile Material Cut-off Treaty (FMCT), whether on a global or a regional basis. There has never been any enthusiasm for such an agreement in Israel, as it would constrain the
country’s most prized strategic asset, and in the process might prove a ‘slippery slope’ towards premature nuclear disarmament, both technically and politically. Moreover, Israel’s major concern is the possibility of Iranian acquisition of nuclear weapons capability via the nuclear fuel cycle, and since an FMCT by itself does not prohibit either uranium enrichment or reprocessing, in Israeli eyes it does not solve – indeed, it would complicate – the challenge of preventing Iranian nuclearization.

Regarding an FMCT, Gerald Steinberg (2005) states: ‘for Israel, elements that might eventually impinge on the nuclear deterrent, such as a fissile material production cutoff, were considered to be extremely remote options, to be considered only in the context of the conditions mapped out for a nuclear weapons free zone’. According to Mordechai Vanunu, former employee at Israel’s Dimona nuclear complex, Israel produces the radioisotope tritium for its nuclear arsenal by irradiating targets of the isotope lithium-6 in the Dimona reactor. Because tritium has a relatively short half-life – 12.3 years – shutting down the reactor would eventually lead to a degradation of Israel’s arsenal (Barnaby 1989: 38–40), or in Steinberg’s phrase, ‘it would eventually impinge on its nuclear deterrent’. Alternatively, Israel could continue to produce tritium in the reactor while a party to an FMCT, but it would have to agree to verification to insure that the reactor was not being used to produce plutonium for weapons, which would not be permitted under an FMCT. However, it might be difficult for Israel to do so while maintaining the current policy of nuclear ambiguity, which is widely viewed in Israel as a net benefit.9

Given the above, what is needed in the Middle East and beyond is a ban on uranium enrichment and reprocessing (except on a multilateral basis) that would apply, *inter alia*, to Iran and Israel alike. Current negotiations on the Iranian nuclear problem have focused on trying to convince/coerce Iran into giving up its right under Article IV of the NPT to enrich uranium indigenously, and to allow stringent IAEA inspections to verify such a commitment. The prospects for an enduring agreement of this nature with Iran, as well as for minimizing future proliferation risks more generally, would be much greater if all countries, including the nuclear-weapons states, also agreed to undertake similar obligations starting from the current nuclear facts on the ground. Specifically, in the context of an agreement with Iran, Israel should renew its rhetorical commitment to an NWFZ in the region. And as a concrete step in this direction, it should also indicate that it is not using the Dimona reactor and associated facilities to produce plutonium, and agree to modalities short of intrusive, on-site inspections that could verify such an undertaking.10

The preceding discussion underscores the dilemma of the double standard, the complexities involved in establishing a Nuclear Weapon-Free Zone in the Middle East and the centrality of an incremental strategy to meaningful progress. Assuming that the parties to such an agreement have the political will to move forward, albeit slowly, the details of such an agreement with respect to scope, process and institutional arrangements would need to be addressed. We consider these issues in the following.
What might a Middle Eastern Nuclear Weapon-Free Zone entail?

NWFZs provide states in a region that wants to be free of nuclear weapons with a vehicle for so doing which is responsive to and consistent with the political, security, geographic and demographic environment in which they would apply. Thus they can go further than the NPT, for example by foreclosing the deployment of nuclear weapons by weapons states in countries within the zone that are their allies, and by complementing IAEA verification of the non-nuclear status of states within the zone by regional or bilateral verification agreements between zonal states. Indeed, the IAEA Statute permits implementation of safeguards tailored to differing security demands of states parties to non-proliferation and nuclear arms control treaties (Hooper 2003). However, as in the case of the NPT, states cannot be forced to join an NWFZ. Rather, successful negotiation of NWFZs has been predicated on the absence of fundamental political or security conflicts among the potential parties to such arrangements. This reflects the fact that arms control is not a way of resolving basic political-security conflicts, but rather a means to operationalize and consolidate political decisions on cooperating in the interests of security and stability.

As of 2005–06, six NWFZs have been concluded. Three have entered into force – the 1967 Treaty on the Prohibition of Nuclear Weapons in Latin America and the Caribbean (Tlatelolco), the 1985 South Pacific Nuclear Free Zone Treaty (Rarotonga) and the 1995 South East Asia Nuclear Weapon Free Treaty (Bangkok). The 1996 African Nuclear Weapon Free Zone Treaty (Pelindaba) still lacks the requisite number of ratifications to enter into force. The Central Asian Nuclear Weapon Free Zone that was under discussion for a decade was signed by its five participating states, all of whom are former Soviet republics, on 8 September 2006. While focused on specific regions, NWFZs are explicitly recognized in the global NPT (Article VII) and seen not only as contributing to regional security and stability, but as complementary to the NPT and the nuclear non-proliferation regime and hence to global peace and security as well (see Principles and Objectives 1995).

Negotiation of a Nuclear Weapon-Free Zone in the Middle East, and more broadly of a Zone Free of Weapons of Mass Destruction, including delivery systems, as advocated by Egyptian President Mubarak, has been on the international agenda for decades. Resolutions urging the creation of an NWFZ date to 1974, when Iran, supported by Egypt, introduced a resolution in the UN General Assembly urging the creation of such a zone. Israel abstained in the annual voting until 1980, when it joined the consensus on the resolution (see ‘Establishment of . . .’ 1990; also Leonard 1991). In the aftermath of the 1991 Gulf War, UN Security Council Resolution 687 set out various requirements for Iraq, several of which were also regarded as steps toward the broader goal of establishing a regional zone free of weapons of mass destruction. These included no acquisition or development of nuclear weapons; no production of weapons-
usable nuclear material; and no development of subsystems or components related to weapons or weapons-usable material. The latter two provisions, more far-reaching than anything in then existing NWFZs, were to an extent incorporated in the Treaty of Pelindaba and are potentially significant for a future Nuclear Weapon-Free Zone in the Middle East.

At the 1991 Madrid Middle East Peace Conference that was spurred by the Gulf War and the revelations regarding the extensive clandestine Iraqi WMD programmes, agreement was reached to develop a multilateral track on regional arms control and security that in turn led to the establishment of a working group on Arms Control and Regional Security in the Middle East (ACRS). Early on, ACRS made important progress in identifying various confidence- and security-building measures that could provide a foundation for moving the regional security agenda forward, but it foundered, due largely to differences between Israel and Egypt, on how to deal with the issue of denuclearization in the Middle East.

The 1995 NPT Review and Extension Conference included a resolution on the Middle East co-sponsored by the United States, the United Kingdom and the Russian Federation that called on the states in the region ‘to take practical steps in appropriate forums at making progress towards, inter alia, the establishment of an effectively verifiable MEWMDFZ and their delivery systems, and to refrain from taking any measures that preclude the achievement of that objective’ (Resolution on the Middle East 1995). While both the Arab states and Israel have since supported the concept, they have very different ideas about how and when it could be brought into force.

The position of the Arab states has always been that Israel must first sign the NPT – for example, UNGA Resolution 36/81 of 9 December 1981 states that ‘adherence to the NPT by all parties of the region will be conducive to the speedy establishment of an NWFZ’. Israel, on the other hand, has maintained that political accommodation is a necessary precondition to serious consideration of a zonal agreement; and that negotiations need to take place freely and directly between the regional parties within the framework of the peace process – that is to say, comprehensive peace between Israel and its neighbours must come first.

Given the political relations and security conditions that today prevail in the Middle East, achieving an NWFZ in the Middle East is a long-term prospect at best. In particular, while the matter of Iraqi possession of WMD is no longer of concern, acquisition of nuclear weapons by Iran is, and the potential for this raises fundamental issues about what types of nuclear activity should be permitted in states suspected of attempting to acquire nuclear weapons under the cover of a peaceful nuclear programme. The problem is not only one of a state carrying out clandestine nuclear activities beyond the reach of traditional IAEA safeguards, but also the possibility of conducting such nuclear activities as uranium enrichment, openly and under safeguards – and subsequently withdrawing from the NPT, and then using the acquired materials, technology and expertise for weapons purposes.
Despite these challenges, indeed perhaps because of them, it is not too early to begin to discuss the technical, institutional and practical issues that would have to be addressed and resolved for negotiations on an NWFZ to lead to a constructive outcome; to clarify the issues that must be addressed, the position that different governments are going to take in a formal negotiation; and to identify what steps will have to be taken by the parties in order to reach agreement. This is especially important since one of the principal parties, Israel, is an undeclared de facto nuclear-weapon state, which means that not only non-proliferation but denuclearization must be on the agenda. As noted by one keen student of nuclear matters in the Middle East (Leonard 1995):

Any major development in the relations among a group of states goes through a sequence of stages, from its original conception to its full realization . . . [t]he full development of a nuclear weapon free zone and regime is almost certain to be an extended process.

We agree that, while a Middle East NWFZ could in principle be established all at once, it is much more likely that this would occur in stages. Indeed, such a staged approach – incremental arms control linked to progress on the path to a just, durable and comprehensive peace in the region – could be mutually reinforcing. Examples of the former would be agreements to ban future and cap current production of fissile materials in all states of the region. We discuss these and other possible steps, including those pertaining to chemical and biological weapons, below.

Although it is the engaged regional states that must define and negotiate zonal agreements, a set of principles and guidelines that should be applied in establishing nuclear weapon-free zones has been elaborated by the UN Disarmament Commission (1999) and endorsed by the UN General Assembly. All current zonal treaties meet these guidelines. Among these are:

- Nuclear weapon-free zones should be based on arrangements freely arrived at among the states of the region concerned.
- The initiative to establish an NWFZ should start from states within the region concerned and be pursued by all the states of that region.
- All of the states of the region concerned should participate in the negotiations on the establishment of such a zone.
- The process of establishing the zone should take into account all the relevant characteristics of the region concerned.
- A nuclear weapon-free zone should effectively prohibit the development, manufacturing, control, possession, stationing or transporting by states parties of any type of nuclear explosive device for any purpose; the zone should also prohibit the stationing of any nuclear explosive devices by any other state within the zone.
- An NWFZ should have an effective means to verify compliance with the treaty obligations through IAEA comprehensive safeguards agreements.
No two NWFZ treaties are exactly alike, but all have certain common characteristics: in particular, a ban on the manufacture, possession, development and testing of nuclear devices. All also require that all nuclear material and installations be placed under IAEA full-scope safeguards to ensure compliance and verification, in some cases supplemented by regional mechanisms and procedures. All include protocols for the application, where appropriate, of some of their provisions to non-regional states, e.g. states which may have jurisdiction over territories located within the zone of application to accept the basic obligations assumed by regional state parties; nuclear-weapon states not to conduct nuclear tests in the zone; nuclear-weapon states to provide negative security assurances to not use or threaten to use nuclear weapons against regional state parties. However, not all qualifying states have ratified or signed the relevant protocols.

In the following, we note the possible obligations of states in a Middle East zone, as well as the verification modalities and institutions that would be required to implement these obligations.

**Obligations**

In general terms, obligations could be of three general kinds: those which exclude possession, acquisition, manufacture of nuclear weapons or nuclear explosive devices; those which foreclose research and development, production, importing or stockpiling of directly weapons-usable materials; those which require safeguards on all nuclear materials, installations and activities in the region as well as full disclosure of all nuclear activities including imports, exports production and basic research and development.

While a Middle East NWFZ would include the UN principles and guidelines enumerated above, other undertakings which have been added to the provisions of existing NWFZs could also be relevant to a zone in the Middle East. Examples of such undertakings are:

- Not to provide source or special fissionable material or equipment or material especially designed for the processing or production of special fissionable material except for exclusively peaceful purposes under strict non-proliferation measures (Rarotonga).
- Not to conduct research on nuclear explosive devices or not assist or encourage anyone else in research on development, manufacture, acquisition or possession of nuclear explosive devices (Pelindaba).
- To apply physical protection measures as provided by the IAEA (INFCIRC/225 as amended), and the Convention on the Physical Protection of Nuclear Material (as amended) (Pelindaba).
- To prohibit armed attack on any nuclear installation (Pelindaba).

The Pelindaba treaty goes even further in providing for the destruction or conversion to peaceful use of facilities for manufacturing nuclear explosive devices. In many ways, Pelindaba could serve as a model for a Middle Eastern NWFZ: it
is the only agreement that involves a former de facto nuclear-weapon state – South Africa – and a concern about ensuring that not only facilities, but also nuclear explosive devices themselves, be identified and dismantled. Also to be considered is a provision against stockpiling any weapons-usable material, wherever produced, on the territory of any state party to a zonal agreement.

The issue of whether production of nuclear weapons-usable materials should be permitted in Iran is the major sticking point in the debate about its nuclear programme. Although the proposal to ban indigenous enrichment and reprocessing in Iran and more generally in all states that have not already implemented these technologies is not without precedent, it has encountered significant opposition because such a ban would add another layer of discrimination with regard to permitted nuclear activities to that already inscribed in the NPT. A possible solution that could be incorporated into a Middle Eastern NWFZ is to require that all enrichment and reprocessing be owned and operated on a multilateral basis (Scheinman 2004; ‘Multilateral approaches . . .’ 2005). Concerning nuclear weapons-usable material, we note that the consensus view is that this means uranium enriched to 20 per cent or greater as well as plutonium of all isotopic compositions.

Verification and institutions

Effective verification is crucial to confidence-building and arms control, but the term ‘effective’ is not easily defined. At a minimum it has a military and political aspect. Political criteria may be more difficult to satisfy than military criteria insofar as they involve perceptions and assessments of intent and thus depend on more subjective measures. Failure to meet political criteria may result in a loss of confidence which can have far-reaching impacts, whereas failure to satisfy military criteria may be less relevant if the political authorities are satisfied with the level of verified compliance.

In the case of the Middle East, where insecurity is high, stability tenuous and distrust widespread, political criteria would be particularly important. Verification arrangements more far-reaching than any of the safeguards heretofore applied by the IAEA (even taking into account the measures available under the Additional Protocol) would be necessary, and a combination of verification strategies would need to be devised. Regardless of whatever control and verification system might be required and implemented by states party to a zonal agreement, IAEA safeguards are a sine qua non for any zone that would expect to be recognized by the UN General Assembly, to provide confidence to states outside the zone, or to be participated in through protocols to the treaty by nuclear-weapon states or non-regional states with territorial interests within the zone (‘Application of . . .’ 2004).

To the extent that consideration has been given by regional officials or analysts to attributes of a possible NWFZ, the need for mutual and binding reassurances between participating states – meaning some form of mutual inspection above and beyond any international verification that might be involved – has
been flagged as a necessary element of the regime. IAEA safeguards may be judged adequate for verifying all nuclear material in peaceful nuclear activity, but not for dealing with such matters as whether a state is conducting research related to nuclear explosives, or has acquired a nuclear explosive device from outside the region, or that weapons-related activity not involving nuclear material is taking place. This is not to make a judgement that international verification is incapable of dealing with some of these issues, especially if supported by access to superior intelligence, but that politically, verification activity by regional or national authorities may be deemed essential.

Against the background of these considerations, several verification options can be identified for a possible MENWFZ, options that combine regional and international approaches. Existing NWFZs have incorporated regional control/verification mechanisms that might be drawn on and adapted to the particular situation in the Middle East. These include the Organization for the Prohibition of Nuclear Weapons in Latin America (OPANAL) for Tlatelolco, a Consultative Committee for Rarotonga, a Commission and Executive Committee for the Bangkok Treaty and the African Commission for Nuclear Energy for Pelindaba. In varying ways these institutions oversee and review the application of IAEA safeguards in their regions; they are authorized to call for special inspections when requested by a party, using IAEA inspectors and/or regional inspectors, and to take steps to provide for additional control measures if deemed necessary.15

In Latin America, a mutual and reciprocal verification system has been put in place by Argentina and Brazil (ABACC). Just as the African Nuclear Weapon-Free Zone has similarities to the Middle East (both regions had or have a nuclear-weapon capable state), ABACC has similarities to the Middle East as it involves countries (Argentina and Brazil) that experienced an era of political tension (although not military hostility) and, once having come to political terms with one another, instituted a system of mutual verification that conducts its activities in coordination with the IAEA, working jointly where feasible and with each entity reaching its own independent conclusions.

In institutional terms, verification options combining international and regional arrangements could be established that met the political requirements of the parties. Without exhausting all possibilities, we can identify several plausible approaches. One option would be to place all routine verification responsibility in the hands of the IAEA, either alone or in conjunction with regionally designated personnel as observers, while having joint international and regional inspection teams deal with any non-routine inspections triggered by special requests of a party or a decision by the IAEA that routine inspection did not provide an adequate basis for conclusions regarding compliance by a state. Another alternative would involve a more formal two-tiered arrangement wherein all routine and non-routine verification activities would be conducted by joint international and regional authorities. A third option could be for international and regional inspection and verification to be conducted independently of one another, each vested with an agreed range of authority relating to
procedures available to deal with questions and findings of non-compliance. In all these cases, institutional arrangements could be in place to review specific situations and to take binding political decisions on how to respond.

Where there is political will to agree to formal constraints on state behaviour, tools are available to verify compliance with undertakings. Adequate, reliable verification regimes that command credibility, build confidence and serve the interest of security and stability can be devised and implemented if the fundamental ingredient of political commitment to successfully promote non-proliferation objectives is there. Verification does not create that will, but it helps to reinforce it and to enable the engaged parties to move forward toward achieving the stability, security and assurance that are necessary to secure peace.

Conclusion

The creation of an NWFZ in the Middle East remains an important long-term goal. However, while this goal has widespread rhetorical support among the key states in the region – Israel, Egypt and Iran in particular – nothing is being done to make progress towards achieving it. At the same time, the prospect of acquisition of nuclear weapons by Iran is a serious problem that cannot be solved solely by pressuring Iran to give up its fuel-cycle ambitions, especially with regard to uranium enrichment. This problem needs to be addressed in the broader context of moving towards international consensus on the dangers of the possession of nuclear weapons by all states, and the need to provide nuclear fuel-cycle services on a multilateral, non-discriminatory basis as the appropriate vehicle for increasing global reliance on nuclear power without a concomitant increase in the risk of further nuclear proliferation.

In the Middle East, the Arab states, especially Egypt, need to acknowledge that progress on arms control, particularly with respect to nuclear weapons, is linked to progress towards a normalization of relations and a just, durable and comprehensive peace among all states in the region. Essential elements here would be the establishment of a viable Palestinian state and recognition of the state of Israel by its Arab neighbours as well as Iran.

All states in the region also need to acknowledge that incremental progress on arms control towards the goal of a WMDFZ should follow incremental progress in the political sphere. Examples of the former in the nuclear area are a commitment that no new enrichment and reprocessing plants be established in the region except on a multilateral basis, and that all current production of weapons-usable materials be terminated. In the chemical and biological arena, the CWC and BWC should be signed and ratified by all states in the region.

In order to move forward along these lines, a dialogue needs to be initiated between the parties in the region, led by Egypt and Israel, with the strong support of other countries, particularly the United States. Such a dialogue must also consider the technical and institutional aspects of such agreements, particularly with reference to regional nuclear verification modalities that go beyond NPT safeguards and are widely viewed as an essential element of a future NWFZ.
Notes

1 Supporters of the policy of treating Israel as an exception with regard to NPT adherence also include the United Kingdom, whose Foreign Secretary Jack Straw has stated that the threat of extinction places Israel in a different security category from any other country in the world.

2 An unusually frank statement on this issue has recently been made by former US Deputy Secretary of Defense John Deutch: ‘This goal [establishing an international norm that forbids the nuclear ambitions of non-nuclear states], in fact, raises a basic hypocrisy on the part of the nuclear powers: they retain their own arsenals while denying others the same right. This contradiction prompted Washington unwisely to commit under Article 6 of the NPT “to pursue good-faith negotiations” towards complete disarmament, a goal it has no intention of pursuing.’

3 According to Cohen, despite the serious military situation on the Syrian front at the beginning of the war, there was still reluctance among Israel’s leaders, notably Prime Minister Golda Meir and her chief nuclear executive, Shalheveth Freier, to consider those hours as a real moment of ‘last resort’.

4 A particularly flagrant case in point was the statement by the newly elected Iranian President Mahmoud Ahmadinejad, speaking to the ‘World Without Zionism’ conference in Tehran on 26 October 2005: ‘As the Iman [Ayatollah Ruhollah Khomeni] said, Israel must be wiped off the map … Anybody who recognizes Israel will burn in the fire of the Islamic nation’s fury . . .’.

5 While accidental and inadvertent use of conventional, chemical and biological weapons is also possible, the potential consequences in the case of nuclear weapons are far greater.

6 An exception being the article ‘Apocalypse Soon’ by Robert S. McNamara.

7 See Baumgart and Müller 2004/05, Kaye 2004 and Steinberg 2005 for further analysis on this.

8 See e.g. Cohen 2001.

9 Israel could also shut down the reactor unilaterally without committing itself to a permanent closure in order ‘to test the water’.

10 One possibility might be remote monitoring of the noble gas fission products released during the reprocessing of spent nuclear fuel.

11 An exception is the Tlatelolco Treaty, which, as originally negotiated – but subsequently amended – made provision for peaceful nuclear explosions.

12 This is based on a study prepared by Lawrence Scheinman for the IAEA in 1992, and subsequently published in modified form in 1992 as GOV/INF/658, with additional comments that account for more recent developments.

13 The Joint Declaration on the Denuclearization of the Korean Peninsula is an example in case (1992).

14 Repeated resolutions in the UN General Assembly and the IAEA General Conference have called upon states in the Middle East to establish a mutually and effectively verifiable zone free of nuclear weapons in the region.

15 OPANAL formally turned over its special inspection responsibility to the IAEA in 1992.
India’s nuclear tests on 11 and 13 May 1998 in the Pokharan desert, and New Delhi’s proclamation that it was a nuclear-weapon power, produced entirely unexpected outcomes for the global nuclear order. In the heat of the moment, the tests suggested a reckless Indian defiance of non-proliferation norms and a major threat to regional stability in the subcontinent. Yet, less than a decade later, the world is debating a major US initiative to integrate India into the global non-proliferation regime. At a time when the world has recognized the urgency of strengthening non-proliferation regime and is focused on the new nuclear threats from North Korea and Iran, the Bush administration has signed a nuclear pact with India (Bush and Singh 2005), calling for changes in US domestic law and the international rules on nuclear commerce in favour of India. And these changes, the Bush administration has insisted, would be meant only for India and not for the other states in possession of nuclear weapons outside the NPT – Israel and Pakistan.

The Bush administration’s case for making a nuclear exception for India has met with fierce resistance from the non-proliferation community in the United States and elsewhere. Whether the Indo-US accord would be approved by the US Congress and the Nuclear Suppliers Group or not, the political case for India’s nuclear exceptionalism has already been made by the pre-eminent power in the international system, the United States, supported by three other nuclear-weapon powers – France, Russia and the United Kingdom.

While the international system and the US political establishment will have to come to terms with this, India has always seen itself in exceptional terms in the global nuclear debate. Even as critics of the Bush administration accuse Washington of undermining the global nuclear order so as to accommodate India, New Delhi too has gone through a divisive debate on the merits and demerits of the nuclear pact with the United States. There was severe questioning of the Indian government’s decision to undertake significant constraints on its own nuclear programme and abide by the global non-proliferation rules in return for full civilian nuclear cooperation from the international community. Despite strong internal and external opposition, the Indian government has managed to create a broad national consensus on the need to separate its civilian and military programmes and place the former under permanent international safeguards.
Underlying this new consensus has been a historic shift in India’s own attitudes to nuclear weapons and non-proliferation. This chapter explains some of the major shifts in India’s nuclear policy and diplomacy since the May 1998 nuclear tests and the evolution of India’s own approach to non-proliferation.

Contemporary Indian nuclear diplomacy

In the wake of Pokharan II, India was determined to convince the international community that it would not become an aggressive or destabilizing nuclear force in the international system. Reassuring the world as to its intentions, however, called for an approach to nuclear issues very different from the one India had adopted in the previous decades. The centrepiece of India’s post-Pokharan nuclear diplomacy became its extended nuclear dialogue with the United States. The prolonged conversation between the two, under two different administrations in both countries, succeeded in getting Washington to understand (if not endorse) the imperatives of India’s nuclear and security policies and blunt the US opposition to India’s nuclear-weapons programmes (Talbott 2004). The Indo-US nuclear dialogue reversed years of Indian refusal to talk of or accept nuclear restraint on its own strategic programmes. In the past, by emphasizing its commitment to total disarmament, India had believed it had little obligation to do anything else.

India’s ability to engage the United States after Pokharan II was rooted in the national confidence that went into the decision to bring its nuclear weapons out of the closet. Prior to that, India had feared that any international engagement in its nuclear-weapons programme and policies could become a slippery slope to denuclearization. After May 1998, with the full knowledge that there was no way of rolling back what it already had achieved, India felt prepared to deal with the outside world on nuclear issues on a pragmatic basis. The declaration that it possessed nuclear weapons also gave India room for reworking its nuclear diplomacy. From being a protester against ‘discrimination’ in the nuclear order, India was now transforming itself into a nation ready to support the existing order and indeed calling for its incremental reform. The essence of the change in India’s nuclear policy after Pokharan II rested in the shift from the earlier emphasis on disarmament to a new one on arms control – global, regional and national.

New Delhi has not articulated its transition towards arms control in any direct manner. Nevertheless, the various policies set in motion by India since the summer of 1998 strongly point to a reorientation of India’s premises on the relationship between arms control and national security strategy. This transition was demonstrated with India’s dramatic about-face in rethinking the Comprehensive Test Ban Treaty, as well as its readiness to join Fissile Materials Cut-off Treaty negotiations, endorsement of the objectives of the Nuclear Non-proliferation Treaty, willingness to strengthen export control regimes, support to nuclear-free zones elsewhere in the world, its readiness to move towards substantive confidence-building measures with Pakistan and a political will to support some of the controversial new US-led approaches to managing nuclear proliferation.
India’s willingness to separate its civilian and military programmes under the July 2005 accord, presenting an acceptable programme of separation in March 2006 during President Bush’s visit to India, marked the culmination of this transition.

The transition is real – but it certainly has not been easy. The new premises of the government on arms control and the need to find accommodation with the world order were vigorously contested within the Indian political class and the strategic community. Suggestions from Delhi that the nation’s diplomacy must now focus on nuclear arms control and confidence-building, as opposed to the traditional emphasis on total elimination of nuclear weapons, evoked passionate opposition both from the left and the right. Equally significant was India’s decision to support the European resolutions on Iranian proliferation at the IAEA in September 2005 and February 2006. For many within the Indian establishment, de-emphasizing disarmament and supporting traditional arms control measures such as the CTBT or new ones like the Proliferation Security Initiative mean surrendering the core principles that have guided Indian foreign policy over the past five decades. They argue that supporting arms control measures is a triumph of new Indian ‘opportunism’ over its past commitment to a ‘principled’ foreign policy and universal disarmament.

Any foreign policy transition towards pragmatism, the critics of the new nuclear approach argue, means discarding India’s past focus on morality, equity and justice in international politics. By declaring itself a nuclear-weapon power, strongly supporting non-proliferation and joining the CTBT, they say, India becomes just as cynical as the other nuclear-weapon states (NWS). Despite this intense opposition, India’s arms control policies have evolved considerably since 1998. Paradoxically, domestic critics of New Delhi’s attempt to join the global non-proliferation order have accused the government of departing from ‘Indian exceptionalism’ in the global nuclear debate; the Bush administration, on the other hand, has sought to justify the nuclear accord with New Delhi precisely on the basis of India’s exceptionalism. Whichever way we choose to look at it, India’s nuclear story is indeed an exceptional one. The following sections attempt to make some sense of India’s nuclear exceptionalism.

De-emphasizing disarmament

New Delhi has long had a basic difficulty in articulating its nuclear policy in terms – balance of power and arms control – that are intelligible to the rest of the world. The founding fathers of the Indian Republic and the succeeding leaders have always shunned the notion of balance of power. Power politics, they said, was passé in the second half of the twentieth century. Instead, India expressed its foreign policy objectives within the framework of liberal internationalism and the idea of ‘one world’. It emphasized the need to redefine the old rules of international politics so as to ensure a more peaceful and cooperative international society. Despite the continuous compulsions on India to adapt to the ‘real world’, the formal and public discourse on India’s foreign policy in general and
the nuclear policy in particular remained rooted in the moral and the normative universe. This was reflected in India’s consistent support to universal disarmament in the 1950s and 1970s, the international campaign against the weaponization of outer space and in favour of the Comprehensive Test Ban Treaty during the mid-1980s, and the action plan on disarmament submitted by Prime Minister Rajiv Gandhi at the UN Special Session on Disarmament in 1988 (Ministry of External Affairs 1988, Perkovich 1999).1

Having declared itself an NWS, after years of vacillation, India has begun to make three basic transitions in its approach to the world – from the normative to the pragmatic, from ideas of collective security to those of balance of power, and from the notion of disarmament to arms control. The Indian government has not in any way suggested since 1998 that it was discarding its historical emphasis on global nuclear disarmament, in particular the total elimination of nuclear weapons within a reasonable timeframe. On the contrary, after Pokhran II, India has repeated its commitment to pursue the elimination of nuclear weapons. Having engineered a rupture in the country’s long-standing policy of nuclear ambiguity, the government sought to reassure key domestic players of the continuity in India’s nuclear diplomacy.

But there is no question that the priority in policy has shifted from the goal of time-bound elimination of nuclear weapons to the pursuit of a less ambitious and more limited agenda of global nuclear restraint. The rhetorical commitment to disarmament is always a safe fall-back option for India if its diplomacy of engaging the United States and world should turn out to be less productive. India has continued to support the drafting of a convention that seeks to abolish nuclear weapons world wide. The continuing campaign for global denuclearization has certainly provided useful counter-arguments against the great powers and their allies who are calling on India to disarm unilaterally.

But any such campaign, India has increasingly realized, must come to terms with current trends in the international politics of nuclear abolition. Despite the phenomenal change in the late 1980s in the world correlation of forces in its favour, the United States has insisted that nuclear deterrence remains the cornerstone of its national security strategy. The United States has also come around to the view that it needs nuclear weapons to deter the use of other WMD (chemical and biological) by so-called ‘rogue states’. And it is believed to be pressing ahead with research on the next generation of nuclear weapons. Russia, which supported nuclear abolition from the mid-1980s to early 1990s, has since cooled its ardour, and Moscow has abandoned the doctrine of nuclear ‘no first use’ it had propounded in the early 1980s. In China, the dominant view on nuclear weapons has been based on realpolitik. The collapse of the mighty Soviet Union, the end of the Cold War and the consequent reduction of US and Russian nuclear arsenals have not, in Beijing’s view, reduced the importance of nuclear weapons in international politics. Britain and France, both in relative decline, have held that nuclear weapons are important to preserve their prestige and standing in world affairs.

While expressing political support to complete disarmament as a diplomatic objective, India began to recognize that nuclear abolition could not be built apart
from the existing structure of power politics in the world. New Delhi came to appreciate that disarmament treaties, even those deliberately structured to be non-discriminatory, do have a differential impact on the key powers of the world and could disturb the existing balance of power. India has not remained unaware that in a world without nuclear weapons, if this were ever to be achieved, the overwhelming military superiority of the United States over its nearest possible rivals might become even more pronounced.

The second-rung powers in the international system, then, might not want to shed their nuclear weapons, even if the United States did. For Russia and China, nuclear weapons would remain important instruments for maintaining their position vis-à-vis the sole superpower in the global order. The overarching US dominance in today’s world and the growing military gap, driven by the on-going revolution in military affairs, between the United States and other powers may have served to increase the utility of nuclear weapons, as an equalizer, for the middle powers.

In the days and months that followed the tests in May 1998, policy planners in New Delhi began to ask themselves: if nuclear weapons are here to stay for a long time to come and they cannot be separated from international power politics, what should be the priorities for Indian nuclear diplomacy in the coming years? Traditionalists in India would have preferred to stay with the mantra of global disarmament and the refusal to support any interim arms control agreement incompatible with the goal of nuclear abolition. But there were others who questioned the strategy of playing for all or nothing. The reformers and innovators tended to gain some ascendancy in the internal debate on the country’s post-Pokharan national strategy. As a result, India has been willing to begin cautiously exploring incremental advances in limiting the dangers from WMD.

The most important international initiative taken by India immediately after May 1998 was in relation to nuclear de-alerting. At the United Nations that autumn, India introduced a resolution on ‘reducing the nuclear danger’ that called for a review of nuclear doctrines by the NWS and take steps to reduce the accidental or unauthorized use of nuclear weapons (‘Reducing the Nuclear . . .’ 1998). The move was initially seen by the world as an attempt to legitimize India’s standing as a declared NWS. But support for the move has increased over the years. The Indian focus on nuclear de-alerting signalled a number of changes in Indian thinking on nuclear issues. Unlike in the past, India was now emphasizing practical steps to deal with the danger of nuclear weapons. Total disarmament, it was underlined, must be treated as a long-term normative goal and not as an achievable diplomatic objective in the near term.

Besides reflecting a shift towards pragmatism in nuclear diplomacy, New Delhi’s initiative on ‘de-alerting’ reinforced the national commitment to a responsible nuclear strategy. The Indian nuclear doctrine unveiled after Pokharan II highlighted two principles – minimum deterrence and no-first-use. This diplomatic focus on global nuclear de-alerting provided a natural complement to the decision in New Delhi to limit itself to the smallest possible nuclear force with the maximum built-in restraint against the use of these weapons. It also
meshed in with the Indian determination to pursue a series of confidence-building measures with its nuclear neighbours China and Pakistan as part of an effort to design a restraint regime in the subcontinent. For many in India and abroad, this reduced emphasis on nuclear abolition was a setback. But in real terms it opened up the possibility of India’s accepting a range of interim arms control arrangements.

Accepting arms control

The strategic objectives of India’s nuclear diplomacy were transformed in the summer of 1998. Until May 1998, the main objective had been to create and sustain the option of making nuclear weapons when needed – which necessarily involved opposing any arms control measures that would either severely restrict or eliminate India’s nuclear-weapon option. Since Pokharan II, the task shifted to defending India’s nuclear deterrent, reducing the political and economic costs of exercising its nuclear option, gaining eventual international acceptance of its new status and learning to live in nuclear peace with Pakistan and China.

The significance of this fundamental transformation in India’s nuclear policy objectives has not been fully understood, either in the domestic debate or the external assessments that followed the nuclear tests. The transition produced new ambiguities in India’s attitudes to the Comprehensive Test Ban Treaty (CTBT) and the proposed Fissile Materials Cut-off Treaty (FMCT), two measures it had supported in the past. The government did move after May 1998 towards supporting both the CTBT and negotiations on the FMCT. While reformers in the Indian system saw the value of leveraging support to these treaties as a way of achieving the new nuclear objectives, there was considerable opposition to joining the CTBT and engaging in negotiations on FMCT. The government’s stance on arms control treaties after 11 May 1998 was not fully explained to key domestic constituencies. Critics of the government, on the other hand, pretended nothing had changed after the nuclear tests and insisted on debating India’s approach to the international arms control treaties within the old framework, linking them to the objective of total disarmament.

In the past, India had rejected most global nuclear arms control arrangements – including the NPT, full-scope safeguards, regional nuclear weapon-free zones, the bilateral denuclearization of India and Pakistan, and more recently the CTBT. India’s nuclear rejectionism was built around the principles of global disarmament, equity and opposition to discriminatory arrangements (Ram 1999). While many in India and outside took India’s protestations literally, it is possible to discern, from a realist perspective, a powerful security consideration underlying the normative argument. This boiled down to the reality that India could not allow the global arms control and non-proliferation regimes to chip away or completely rob it of the option to build nuclear weapons in future. Having finally exercised its option, it was inevitable that India would review its traditional opposition to arms control. Until 1998, what India usually asked itself was whether an arms control treaty was global and non-discriminatory. After
deciding to go nuclear, India had to look at two different posers. First, how would a treaty affect India’s national security? Second, what would be the gains and losses of joining a particular arms control arrangement?

India is not the first country to make such a transition. China, for example, has moved from its past intense ideological opposition to all arms control, which it had branded as reflecting superpower hegemony, to pragmatic participation in the global nuclear regimes. It was to take China nearly two decades to make this transition after conducting the first nuclear test in 1964 – but India did not have that luxury. Facing a hostile international environment after its nuclear tests, India needed to make a rapid transition in its arms control positions in order to dent widespread international opposition to its nuclear weapons. Immediately after announcing its nuclear tests on 11 May 1998, the Indian government sought to soften the impact of the political shock waves it had created by announcing a package of arms control proposals that included an immediate unilateral moratorium on new nuclear tests, flexibility on joining the CTBT, readiness to negotiate the FMCT and a nuclear no-first-use agreement. Some of these were to come up later as key benchmarks in the extended nuclear dialogue between India’s Foreign Minister Jaswant Singh and the US Deputy Secretary of State, Strobe Talbott.

As part of its bargaining with the Clinton administration on nuclear issues and sanctions, the Vajpayee government came close towards joining the CTBT in late 1999. But three factors precluded such a move: the residual ideological opposition at home to nuclear treaties, technical questioning of the adequacy of the tests for ensuring the credibility of the nuclear arsenal and the decision of the US Senate to reject CTBT ratification. The ideological opposition in India to that treaty is marked by a supreme irony. There is not one political formation in the country that demanded additional nuclear tests or sought to violate the core obligation of the CTBT. Yet there was no agreement within the country on formalizing that obligation and convincing the world that India had carried out its last nuclear tests on 13 May 1998 (Poulose 1996).

In defence of the government’s decision to stop further testing of nuclear weapons, the official scientific establishment in India claimed it had enough data to maintain a credible nuclear deterrent and that it did not need additional nuclear testing. The left liberal political opposition said it was worried about a nuclear ‘arms race’ between India and Pakistan in the wake of the May 1998 tests; yet it was unwilling to back a test ban treaty that would have automatically limited the sophistication of Indian and Pakistani nuclear arsenals. For much of the opposition, perceptions that the government was ‘selling out to the United States’ and that the treaty was ‘unjust and unequal’ remained the key arguments in rejecting the CTBT.

The government, in contrast, hinted that signing the CTBT would be a bargaining chip in the very necessary effort to limit international sanctions against India. Much of the strategic community, barring a small but vocal minority, was convinced that India could live without further nuclear testing. The Indian debate on the CTBT remained inconclusive, as the US Senate rejection made it
virtually impossible to get Indian consensus on joining the treaty. Nevertheless, the Indian debate on the CTBT was an important watershed in its approach to arms control and disarmament issues, and treaties in particular. While the normative issues of equity and fairness and the fear of US imposition remained in play, the Indian nuclear debate for the first time saw a discussion of the treaty in terms of security considerations, and potential trade-offs in other areas. That marked a huge departure from the past ideological discourse on nuclear treaties.

While it did not eventually sign the CTBT, India has adhered to its moratorium on nuclear tests. Notwithstanding persistent speculation in the United States, it is unlikely that New Delhi will rock the global boat on nuclear testing. Despite scepticism from the Western weapons establishment and the demand of some at home to conduct at least one large thermonuclear test, the Indian government has reaffirmed its commitment to the moratorium and its readiness to bring the CTBT into force along with other states.

Similarly there has been an important shift in India’s attitude towards the FMCT. Though the issue was less contentious at home, the government assured the Clinton administration of its support to negotiations in Geneva on the drafting of the treaty. While India was unwilling to accept a unilateral or multilateral moratorium on the production of fissionable material pending the negotiation of the FMCT, it strongly supported the negotiations as such. Unlike Pakistan, which raised questions on the scope of the treaty (in particular the safeguards coverage of the past production of fissile material), and China, which seemed to link FMCT to missile defences, India broadly supported the treaty objectives.

The key question India was asking itself was somewhat of a departure from the past: the issue, at least among policy-makers, was no longer whether the FMCT was equal and non-discriminatory. It was whether India had sufficient nuclear material at hand to maintain a credible nuclear deterrent. There is no accurate publicly available information on the size of India’s plutonium inventory. However, the very fact that the government offered to negotiate an FMCT suggests that it was confident of being able to maintain a minimum nuclear deterrent under a worldwide ban on further production of the material.

On the other hand, the decision was obviously based on the assessment that it would take some time before the treaty could be negotiated and implemented. While supporting FMCT negotiations, India was reluctant to join a unilateral moratorium on the production of fissile material. Arguments from the United States, in the Talbott–Jaswant dialogue, that India would gain by constraining fissile material production in Pakistan at current levels were unacceptable to New Delhi. India is unlikely to accept unilateral constraints on its fissile material production as a precondition for civilian nuclear energy cooperation – a position reaffirmed during the Indo-US negotiations of the 18 July 2005 statement on civilian nuclear cooperation in Washington. While rejecting a unilateral or multilateral moratorium on fissile material production, India agreed in the 18 July statement to support the Geneva negotiations of an FMCT, as well as to continue its moratorium on nuclear testing.
Endorsing the Non-proliferation Treaty

Nothing better illustrates the significant changes in India’s nuclear mindset than its total about-face on the NPT. After years of lambasting the treaty, which was seen as the veritable symbol of a discriminatory order, India has since 1998 come to endorse the basic objectives of the treaty explicitly. For nearly three decades, India, ambiguous about its own nuclear posture, whined and complained about the inequities and unfairness of the NPT. Even though much of the world came to accept the NPT, India kept up its demonization of the accord. But then, having acquired nuclear weapons itself, and recognizing the importance of preventing the further proliferation of weapons of mass destruction, India began to take a more objective and relaxed view of the treaty system. Even as it recognized that the NPT system would not be able to confer the formal status of a nuclear-weapon state on India, New Delhi was confident enough to extend political support to the NPT and its objectives.

In a formal statement to the Indian parliament on 9 May 2000, Foreign Minister Jaswant Singh expounded on the new approach. The occasion was the NPT Review Conference then under way in New York. Declaring that India was a ‘nuclear weapon state’, Singh told the Indian parliament: ‘Though not a party to the NPT, India’s policies have been consistent with the key provisions of NPT that apply to nuclear-weapon states. These provisions are contained in Articles I, III and VI.’ Singh went on explain India’s ‘compliance’ with the NPT. The irony of this should not be lost. After years of branding the NPT as an instrument of dominance and hegemony, and as a symbol of ‘nuclear apartheid’, India was declaring itself to be part of the system.

Of particular significance are Articles I and III, both of which refer to the non-proliferation obligations of the NWS under the treaty. In reference to Article I, Jaswant Singh said, ‘India’s record on non-proliferation has been impeccable’. On Article III, he added that India’s nuclear exports had always been under international safeguards (full text in Singh 2000). In March 2005, on the eve of the 2005 NPT Review Conference, the Foreign Minister (now representing a different government) once again reaffirmed India’s compliance with the treaty (Singh 2005a).

These statements reflected more than mere rhetorical commitment to the objectives of non-proliferation. India’s nuclear dialogue with the United States saw export controls as an important benchmark, and resulted in a significant strengthening of India’s procedures in relation to monitoring and preventing the transfer of sensitive items that could be used in WMD programmes. In the past India had denounced such export control arrangements as part of the discriminatory North–South paradigm; now it acknowledged the importance of preventing high-level technologies from falling into the wrong hands. In the past, India had refused to engage the multilateral export control groupings. Now, in the post-1998 period, India has begun active consultations with these groups and hopes to join them on a reasonable basis in the near future.

Even more significantly, India has sought to present itself as being in tune
with the sentiments of the majority of non-nuclear states for ‘negative security assurances’. Referring to his country’s no-first-use stance and the commitment to non-use against non-nuclear states, Jaswant Singh said, ‘this meets the demand [for] unqualified negative security assurances raised by a large majority of non-nuclear states’. In another twist, India – which had consistently rejected the South Asian NWFZ first mooted by Pakistan in 1974 – was ready to extend support to such zones elsewhere in the world. Jaswant Singh said, ‘India has indicated readiness to provide requisite assurances to the nuclear weapon free zones in existence or being negotiated’ (Singh 2000, ‘India for a . . .’ 1999). Sceptics suggested that India might be playing politics with the nuclear issue and seeking equivalence with the recognized nuclear-weapon states. There could be no doubt, however, that India had moved decisively away from its earlier critique of NWFZs.

**Supporting new non-proliferation measures**

Besides trying to find a *modus vivendi* with traditional nuclear arms control measures, India has also sought to find ways of cooperating with the new ideas on non-proliferation that began to emerge under the Bush administration. When President Bush announced a sweeping seven-point agenda that went beyond the NPT framework for constraining nuclear proliferation (Bush 2004), India reacted in a measured manner. Contrary to the traditional argumentation about the ‘discriminatory nature’ of the global nuclear order, the government actually welcomed the initiative and called for cooperative international action to stem the new tide of global proliferation of weapons of mass destruction: ‘We believe that meeting new proliferation challenges requires fresh approaches, pooling together the efforts and resources of the international community. We welcome multilateral consultations between all partners against proliferation on developing an effective framework’ (India 2004). In effect, New Delhi was saying it was ready for talks with Washington on the construction of a new global nuclear order.

The statement also drew attention to the ‘Next Steps in Strategic Partnership’ initiative unveiled by President Bush and Prime Minister Vajpayee in January 2004, reaffirming (Vajpayee 2004):

> Both our countries are partners in the war against terrorism and partners in controlling the proliferation of weapons of mass destruction and the means to deliver them. We see common interest, as well as expanding cooperation in countering proliferation as a key element in our strategic partnership with the USA.

India was informed of the broad thrust of the Bush initiative in advance and its officials carefully assessed the seven proposals. The assessment in Delhi was that India should have few difficulties with the US formulations. India’s positive response to the Bush initiative was presented to the public in general terms
without going into specifics. It highlighted the inadequacy of the present non-proliferation regime, supported the principle of effective non-proliferation and called for consultations on the new Bush initiative. This response to the seven-point non-proliferation agenda eventually provided the basis for the 18 July 2005 Indo-US understanding on civilian nuclear energy cooperation and nuclear non-proliferation.

The underlying premise of the Indian response to Bush’s proposals was that India, as a responsible nuclear-weapon power, is determined to contribute to the construction of a new global nuclear order. Amidst the stereotyping of the Indian nuclear responses in the 1970s and 1980s, the original approach of India to non-proliferation has often been forgotten. It was in fact India that launched the global debate on non-proliferation four decades ago. Shocked by China’s first nuclear-weapon test in October 1964, India initiated the international debate on non-proliferation. But the outcome of that negotiation, the Nuclear Non-proliferation Treaty, failed to address India’s concerns. New Delhi remained an outsider, never impressed with the NPT. Since 1998, however, India has not gloated about the crisis in the NPT order, but has come closer to the major powers in defending the treaty’s main objectives. As the global debate on the NPT entered a new phase, India, as a self-declared nuclear-weapon power, had begun to respond with some sophistication to the new international initiatives on non-proliferation.

The first proposal from George W. Bush related to the expansion of the Proliferation Security Initiative (PSI) that was launched in 2003 and has steadily gained international support (see Bush 2003). The PSI called for interdiction of international traffic in sensitive nuclear materials through cooperative action by the naval and air forces of friendly nations. India’s initial response was to neither criticize nor endorse the PSI. Its main concern was whether support to the PSI would automatically ensure that India’s own nuclear commerce would not be targeted by the international community. As the victim of clandestine nuclear flows between Pakistan and North Korea, India understood the importance of addressing the challenge of international traffic in sensitive materials. Yet it also wanted to be sure there were no implicit threats to its own security from the PSI. This initial ambivalence on the PSI eventually moved towards an engagement with Washington on the subject. India sought clarifications on the procedures to be adopted and the decision-making in the PSI coalition on whom and when to interdict. A significant internal debate is under way within the Indian establishment on the relative merits and demerits of joining the PSI.

Washington is aware of the vital role that the Indian navy could play in monitoring and interdicting international commercial traffic in the Indian Ocean region. But questions remain to be addressed on the terms and conditions under which India could become a part of the PSI, either formally or informally. In response to suggestions from India, the Bush administration has disbanded the core group in the PSI. India appears to have given some commitments on joining the PSI at an early date in the negotiations running up to the 18 July agreement, and has already begun working on plans to join the Container Security Initiative after extensive consultations with Washington (Khurana 2005).
India did not object to the second Bush proposal that called for a UN Security Council Resolution criminalizing proliferation, strengthening export controls and tightening security over sensitive materials. With full governmental control over all nuclear-related activity, New Delhi has a record much better than that of many nations in Europe in preventing proliferation. India has broadly endorsed UN Security Council Resolution 1540, while making it clear that it does not accept any potential reading of the resolution to suggest India must sign the NPT as a non-nuclear-weapon state.

In a letter to the UN Security Coouncil, Indian Permanent Representative Vijay Nambiar declared:

> India cannot accept any obligations arising from treaties that India has not signed or ratified. The position is consistent with the fundamental principles of international law and the law of treaties. India will not accept externally prescribed norms or standards, whatever their source, on matters within the jurisdiction of the Parliament, including national legislation, regulations or arrangements which are not consistent with India’s constitutional provisions and procedures, or are contrary to India’s national interests, or infringe on its sovereignty.

(Nambiar 2004)

While New Delhi has declared itself a nuclear-weapon power after 1998, it is not formally recognized as one under the rules of the NPT. India has had to make sure that the new rules would not affect its nuclear standing. At the same time India, as a responsible NWS, has also wanted to contribute to the management of new threats to international security.

As the Security Council grappled with the question of criminalization, India had to prevent any wordings in the final resolution that might constrain its nuclear programme. Recent years have seen persistent efforts by various countries to insist that membership of the NPT be made universal. This has translated into the demand that three countries today outside the NPT ambit – India, Pakistan and Israel – must give up their nuclear weapons. The draft resolution on criminalizing proliferation introduced by the United States at the Security Council in March 2004 called upon all states ‘to promote the universal adoption, full implementation and, where necessary, strengthening of multilateral treaties whose aim is to prevent the proliferation of nuclear, biological or chemical weapons’. In its talks with Washington, New Delhi called for a modification of the language in order to confine the application of these provisions to only those states party to the various non-proliferation treaties. This ‘Indian amendment’ was taken on board by the Bush administration, thereby removing the prospect that India would be expected to implement the provisions of a treaty to which it does not subscribe. It was to make absolutely sure there would be no misunderstanding on this point that Nambiar made his statement (see Mohan 2004).

In 2005, India passed comprehensive legislation to translate its commitments
under UN Security Council Resolution 1540 into domestic law. Introducing the new legislation on WMD proliferation, Natwar Singh explained the rationale:

India will continue to ensure that WMD-usable materials, equipment and technologies do not fall into the wrong hands whether of States or non-State actors, and in particular of terrorists. Our system of export controls is under continuous review; we continue to update these controls where necessary.

Over the years, India has enacted a corpus of legislation dealing with activities of direct or indirect relevance to weapons of mass destruction, their means of delivery and related materials, equipment and technologies. It has also institutionalized administrative mechanisms to prevent unlawful access to such weapons and their delivery systems. Conscious of its responsibilities, India has been exercising controls over the export of WMD-usable materials, equipment and technologies.

It is now considered desirable to introduce an overarching and integrated legislation to prohibit unlawful activities in relation to weapons of mass destruction and their means of delivery and to build upon the regulatory framework related to controls over the export of WMD-usable materials, equipment and technologies, especially in view of India’s status as a nuclear weapon state.

(Singh 2005b)

Another proposal from President George W. Bush related to a ban on selling ‘enrichment and reprocessing equipment and technologies to any state that does not already possess full-scale functioning enrichment and reprocessing plants’. India would not be affected by this ban, since it already has a fully developed nuclear fuel cycle, including enrichment and reprocessing. More important, operational support from India, a potential exporter of these technologies, is of some importance in making the ban stick. With its own position secure, India was also amenable to joining any campaign against the proposal on limiting access to certain fuel-cycle technologies by Iran and other countries. In the July 2005 pact with the United States, India formally agreed to ban the export of enrichment and reprocessing technologies.

Another proposal from Bush that generated substantive internal discussion within the Indian establishment was on the additional protocol. The US President proposed, ‘only states that have signed the Additional Protocol be allowed to import equipment for their civilian nuclear programmes’. The Additional Protocol designed by the International Atomic Energy Agency applied tighter safeguards on national nuclear programmes. At first glance, this could be seen as affecting India’s search for international cooperation in producing nuclear electricity. India had opposed in the past any attempt by the IAEA to impose anything other than facility-specific safeguards on plants built with international cooperation. India refused to accept any expanded form of international control over its nuclear programme, civil or military.
The unanswered question is whether India, like other nuclear-weapons states, will decide to voluntarily put some civilian facilities under IAEA monitoring and sign the model Additional Protocol applicable to NWS. This was among the central issues negotiated during the drafting of the July 2005 statement with the Bush administration; it involved some finessing on the nature of the safeguards India would accept and its comparison with the obligations of the nuclear-weapons states. The Indian government initially interpreted its safeguards commitments under the July statement as demanding ‘no more or no less’ than the other NWS. But it responded to the demands of the United States and the international community to accept permanent safeguards on the civilian facilities it chose to put under IAEA monitoring in return for commitments on uninterrupted international cooperation, especially on fuel supply (Singh 2005, 2006).

This new approach on reaffirming India’s commitment to non-proliferation and linking it with its interest in gaining access to civilian nuclear technology has been in the making ever since May 1998. The changed philosophy was summed up by Prime Minister Manmohan Singh in 2004:

India is a responsible nuclear power. We are fully conscious of the immense responsibilities that come with the possession of advanced technologies, both civilian and strategic. While we are determined to utilize our indigenous resources and capabilities to fulfil our national interests, we are doing so in a manner that is not contrary to the larger goals of nuclear non-proliferation.

India will not be the source of proliferation of sensitive technologies. We will also ensure the safeguarding of those technologies that we already possess. We will remain faithful to this approach, as we have been for the last several decades. We have done so despite the well-known glaring examples of proliferation which have directly affected our security interests.

The limitations of the present non-proliferation regime should not be further accentuated by artificial restrictions on genuine peaceful nuclear applications. Technology denial and closing avenues for international cooperation in such an important field is tantamount to the denial of developmental benefits to millions of people, whose lives can be transformed by the utilization of nuclear energy and relevant technologies.

(Singh 2004)

**Codifying national restraints**

The Bush administration deserves considerable political credit for encouraging India to adopt a more positive attitude to global non-proliferation and national restraints on its nuclear-weapons programmes. If previous US policy was aimed at forcing a change in Indian policy through technology denial and sanctions, the Bush administration has adopted a strategy based on incentives, especially high technology cooperation, to induce a change in the Indian behaviour. In his first
term in office, Bush signed the ‘Next Steps in Strategic Partnership’ (NSSP) that set forth a set of mutual commitments within a cooperative framework (Vajpayee 2004).

The NSSP marked an important shift in the nuclear dialogue between India and the United States. It provided a basis for ending the long-standing nuclear disputes between the two nations since 1999, opening the door to reciprocal gestures – on non-proliferation from India, and a loosening of advanced technology transfers. While there were some doubts in India about the effectiveness of the NSSP, from the US perspective it marked the new beginning of a new approach: a nuclear India was to be viewed as part of the solution to proliferation (Tellis 2004).³

In its second term, the Bush administration conceded that negotiations on the NSSP were framed too narrowly and that the time had come to take a broader view of the nuclear dialogue with India. Briefing the Washington press corps on 25 March 2005, a senior administration official stated that, as part of a thorough review of US policy towards South Asia, Washington was now revising its approach to the NSSP dialogue with India and on initiating civil nuclear energy cooperation. Moreover, along with a ‘robust strategic dialogue’, there is ‘in parallel … an energy dialogue that would include civil nuclear and nuclear safety issues. Keep building the next steps in strategic partnership process that’s already underway and establish a working group on space’ (US Department of State 2005).

India’s enthusiastic response to the Bush administration’s offer of civilian nuclear energy cooperation led to negotiation of the July 2005 nuclear pact, under which Washington agreed to persuade the US Congress to change the domestic non-proliferation laws as well as its allies to modify the NSG rules to facilitate civilian nuclear energy cooperation with India. New Delhi in turn undertook new non-proliferation obligations as well as restraints on its own nuclear-weapons programme (Mohan 2006).

The nuclear restraints and non-proliferation obligations that India undertook were clearly set out in the statement issued on 18 July 2005:

The Prime Minister conveyed that for his part, India would reciprocally agree that it would be ready to assume the same responsibilities and practices and acquire the same benefits and advantages as other leading countries with advanced nuclear technology, such as the United States. These responsibilities and practices consist of identifying and separating civilian and military nuclear facilities and programs in a phased manner and filing a declaration regarding its civilians facilities with the International Atomic Energy Agency (IAEA); taking a decision to place voluntarily its civilian nuclear facilities under IAEA safeguards; signing and adhering to an Additional Protocol with respect to civilian nuclear facilities; continuing India’s unilateral moratorium on nuclear testing; working with the United States for the conclusion of a multilateral Fissile Material Cut Off Treaty; refraining from transfer of enrichment and reprocessing technologies to states that do
not have them and supporting international efforts to limit their spread; and ensuring that the necessary steps have been taken to secure nuclear materials and technology through comprehensive export control legislation and through harmonization and adherence to Missile Technology Control Regime (MTCR) and Nuclear Suppliers Group (NSG) guidelines.


Many in the United States accused the Bush administration of not extracting enough restraint from India, especially an immediate moratorium on the production of fissile material and the signing of the Comprehensive Test Ban Treaty. In India, there were charges against the government for giving away too much to the United States and for agreeing to ‘cap’ the nation’s nuclear capabilities. Clearly both charges could not have been true – and, as it turned out, neither of them was accurate.

The July statement produced a reasonable compromise that involved substantive restraints on India, in return for attractive rewards. The most significant of these new promises from India has been the offer to separate its hitherto enmeshed civilian and military nuclear programmes. This has also meant that India has had the largest unsafeguarded nuclear programme in the world. But now India is figuring out ways in which it can bring its large civilian component under international safeguards. While the debate is a wrenching one in India, the government appears committed to moving forward.

As long as India retained its nuclear ambiguity, it was loath to accept any international legal arrangement that could constrain its future programmes. The only past exception was the historic 1963 decision by Jawaharlal Nehru, who chose to make India the first country to sign the PTBT negotiated by the United States, Soviet Union and United Kingdom – a decision that came on the very eve of the first Chinese nuclear test in 1964. Today, having crossed the nuclear Rubicon and proclaimed the policy of a pursuing only a credible minimum deterrent, India is now prepared to accept multilateral arms control agreements such as FMCT and a separation of civil and military nuclear programmes which constrain its own nuclear-weapon capabilities.

Promoting regional stability

The transition in India’s nuclear policy has also been captured by the draft nuclear doctrine that India issued in August 1999. In the controversy that followed the release of the document, Western observers paid scant attention to certain formulations that were entirely new for India. In its final section, the draft for the first time endorsed the notion of arms control and its relevance for India’s security. The last two sentences of the draft state:

Nuclear arms control measures shall be sought as part of national security policy to reduce potential threats and to protect our own capability and its effectiveness. In view of the very high destructive potential of nuclear
weapons, appropriate nuclear risk reduction and confidence-building measures shall be sought, negotiated and instituted.

(‘Indian Draft . . .’ 1999)

For a Western audience reared on deterrence and arms control, such statements might sound self-evident. But in the context of the Indian debate that had focused on normative considerations, acknowledging arms control as part of security policy and recognizing the need to institute nuclear CBMs represent a substantial movement forward.

The new support to arms control and nuclear confidence-building was built on the incremental evolution of attitudes during the 1990s and the intense exposure of the Indian strategic community to Washington’s unending Track Two initiatives aimed at promoting nuclear dialogue and CBMs in the subcontinent. By June 1997, when India and Pakistan had agreed on a structured dialogue, they had put ‘peace and security, including CBMs’ at the top of their bilateral agenda. When the two governments agreed, in September 1998, to initiate talks after a period of tension following the nuclear tests, there came the first formal discussion of nuclear and conventional CBMs, later that same year. This was further consolidated in the MoU on CBMs that the Indian and Pakistani Foreign Secretaries signed during the visit of Prime Minister Vajpayee to Lahore in February 1999 (Lahore MoU 1999).

India’s readiness to negotiate CBMs to stabilize the nuclear relationship with Pakistan has also involved another important intellectual leap. Throughout the 1990s, many in India were concerned that the CBMs were part of the ‘American plot’ to roll back Indian nuclear and missile capabilities. These measures were seen as the first steps on a slippery slope of denuclearization. The Indian strategic community vigorously objected to the constant refrain from the United States on the potential for a nuclear war in the subcontinent, and that Kashmir was the most dangerous ‘nuclear flashpoint’ in the world. The typical Indian argument then was that India and Pakistan were capable of managing their own affairs, and that they did not need US intervention to promote stability in the subcontinent. Pakistan, on its part, found the talk of a nuclear flashpoint a convenient way of drawing international attention to its Kashmir dispute with India.

The 1999 Kargil crisis, however, cured the Indians of the tendency to reject the possibility that nuclear instability might be a problem in the subcontinent. The Indian side now recognizes it had entered into the Lahore talks with the profound misperception that the state of nuclear deterrence in the subcontinent automatically prevented the outbreak of a conventional war. Indian strategists loudly proclaimed that a traditional conventional war with Pakistan – which had not taken place for nearly three decades – was for all practical purposes ruled out under conditions of nuclear deterrence. The impossibility of a conventional war, in turn, India believed, had created the space for a political settlement of outstanding issues between the two neighbours.

The surprise at Kargil was less military than intellectual. The foundations of the surprise were rooted in the dominant culture of rejecting Western arguments
on non-proliferation and arms control as well as in the inability to see that nuclear equivalence had opened up interesting military/strategic options for Pakistan in Kashmir. Many in the strategic community who had argued that overt nuclear postures would inevitably lead to stable deterrence had to reconsider their ideas in the wake of the Kargil conflict. Besides the imperative of preparing for a ‘limited conventional conflict’ that arose from the Kargil experience, India also began to recognize the importance of a full range of stabilizing measures that must be consciously put in place to prevent nuclear crises.

In comparison to previous suspicion of proposals for stabilizing measures emanating from the United States, there is today far greater intellectual and institutional support in India for expansive CBMs with Pakistan. The measures conceived in the Lahore MoU are fairly simple and their early implementation indeed appears feasible. There is no shortage of ideas on further measures – communication, notification, observation and operational restraint – that the two nations can consider in the effort to enhance nuclear stability in the subcontinent. India is prepared to accept a wide range of those measures in consultation with Pakistan, but would like to start with relatively less complicated measures.

India may also be prepared to consider undertaking some of these measures unilaterally. Operational limitations on nuclear arsenals, however, are likely to be accepted only after a culture of restraint has been built up over the years and a new comfort level between the two military establishments has been reached. While the Kargil War of 1999 and the military tensions during 2001–02 seemed to confirm the dangers of nuclear weapons in the subcontinent, they also paved the way for a more substantive discussion of nuclear CBMs – initially in the Lahore MoU and later in the resumed peace process since 2004 January. However, several key political obstacles will need to be overcome before India and Pakistan can reach the happy destination of nuclear stability in the region.

In Pakistan there is deep suspicion that any emphasis on nuclear stability might end up taking the focus away from what it sees as a core issue – the dispute over Kashmir. In the view of General Musharraf, the best CBM would be early resolution of the Kashmir dispute. For India, the problem lies elsewhere. While it is more than ready to move across a broad front of cooperation with Pakistan – from military CBMs to expanded trade and economic interaction – the question of ‘cross-border terrorism’ remains central. The Indian leadership believes it is impossible to sustain domestic political support to engaging Pakistan on the full range of issues in an atmosphere of continuing violence and terrorism sponsored from across the border.

Having come out of the nuclear closet, India accepts the importance of configuring a new set of explicit and well understood rules to govern its bilateral relations with Pakistan. Such rules are essential if the two sides are to achieve their principal common security objective – avoidance of a nuclear war in the subcontinent. India is no longer in a predictable, knee-jerk opposition to nuclear CBMs; but is at a loss to figure out how to get Pakistan to embark on implementing an agenda of cooperative security. In 2004, a way out was found to revive the peace process under which India promised to negotiate with Pakistan
on Kashmir, and Islamabad in turn agreed to create an atmosphere free of violence and terrorism. Both sides also agreed to expand measures for military and economic confidence-building between the two nations. As a consequence, since 2004 more has happened between India and Pakistan on Kashmir, on nuclear and military CBMs and in the field of economic cooperation, than in the many previous decades. Curiously, the nuclearization of the subcontinent in 1998 has had much to do with this positive development.

Conclusion

India’s decision in May 1998 to end its nuclear ambiguity has allowed the country to move towards a more positive approach towards arms control at all levels. It has helped define a more responsible Indian approach to arms control treaties at the global level, with a new readiness to accept internationally mandated restriction of its strategic programmes, to recognize WMD proliferation as an important international security problem, to raise standards of implementing controls on the spread of sensitive technologies and to accept the need for a credible regime of nuclear and conventional military CBMs in the subcontinent to reduce the danger of a nuclear war. India has overcome its earlier intellectual resistance to the idea of arms control that is limited in scope and aims at a narrow range of security objectives. New Delhi is no longer the permanent dissident in the global nuclear debate. Today it is ready to contribute constructively in building global and regional arms control regimes. Demonstrating the willingness to pursue its national security interests in a responsible manner, India is prepared for substantive negotiations that involve complex bargaining and trade-offs.

In addition to the political confidence that has come from seeing itself as a nuclear-weapon power, the changing nature of the relationship with the United States has substantially altered the political context of the nuclear debate within India. The past opposition to arms control was as much based on the view that the United States stood against India’s security interests as it was on first principles. With anti-Americanism as one of the guiding principles of the Indian discourse on international relations, ideas from the United States on arms control and nuclear stability found little receptivity in India. In the 1990s, the US non-proliferation policy appeared to deepen fears in New Delhi that the new coercive internationalism of the liberals in Washington would force a roll-back of India’s strategic capabilities. Washington’s thesis of ‘Kashmir as a nuclear flashpoint’ meant demands for concessions from India on two core aspects of its national security – Kashmir and territorial integrity, as well as its nuclear and missile capability.

The post-Pokharan political dialogue between New Delhi and Washington, albeit inconclusive, has offered the promise of a new political template that could guide Indo-US relations in the future. Instead of letting nuclear differences define the relationship, the two sides have chosen to put in place a broader engagement that can help to manage the nuclear divergence in a mature manner.
This broader engagement includes recognition of the prospect of a ‘natural alliance’ between the two democracies, the initiation of security cooperation for example in the area of counter-terrorism and a readiness to expand the framework of the dialogue between the two states beyond the traditional confines of the subcontinent. The new approach in the final years of the Clinton administration helped to accelerate India’s evolution towards accepting the utility of arms control and non-proliferation and national nuclear restraint.

On the other hand, the project that India and the United States have launched on integrating India into the global nuclear order will completed only when the elements of the July 2005 nuclear pact have been implemented. Those opposing the Indo-US nuclear pact have a number of arguments, including a consequentialist one: making a nuclear exception for India would undermine the non-proliferation regime itself. The argument is equally strong from New Delhi and Washington that bringing India on board will strengthen the non-proliferation order. No system of international rules can survive if they do not meet the interests of key powers in the system. As India emerges as a major power and increases its capacity to export sensitive technologies, bringing it into the NPT system would only serve to strengthen the global nuclear order. Above all, India has shown the capacity to alter its own former idealist premises significantly and move towards more practical accommodation with the international system.

Notes
1 For a collection of documents on India’s disarmament initiatives, see Ministry of External Affairs 1988. For an appreciation of the depth of Indian domestic political focus on disarmament see Perkovich 1999.
2 For a shift in the Indian position on safeguards, see the two statements made by Prime Minister Manmohan Singh in the Indian parliament on 29 July 2005 and 7 March 2006. In the former Singh insisted that India will undertake only those obligations that are similar to those in force for other nuclear-weapon states. In the latter, he focused on the acceptance of an ‘India-specific’ safeguards arrangement with the IAEA.
3 Ashley Tellis was personally involved in the NSSP talks with India.
10 Pakistan as a receptive proliferator

Talat Masood

The nuclear tests conducted by India and Pakistan in May 1998 created a new security dynamic in the region, with major regional and global implications. This meant a severe setback to the non-proliferation regime and had a destabilizing effect on the region, at least initially, giving rise to increased tension and hostility among the nuclear rivals. Since then, the situation has stabilized somewhat as the two countries adjust to the significant developments on international and domestic scene and engage in a mutually agreed peace process. However, real progress on resolution of Jammu and Kashmir and other outstanding disputes is necessary for there to be enduring peace and strategic stability in the region.

For over three decades, the nuclear policy of Pakistan has remained an integral and critical element of its foreign and security policy. Largely a reflection of its national priorities and ethos, it is specifically aimed at countering India’s nuclear capability and military dominance. Consequently, Pakistan’s current and future weapons build-up is expected to maintain a certain strategic parity with its South Asian rival – with the inherent potential for an arms race.

The three Indo-Pakistan wars – of 1948, 1965 and 1971, particularly the humiliating defeat of Pakistan in 1971 – had a traumatic effect on its national psyche. That war led to the secession of the eastern wing of the country and the establishment of the independent state of Bangladesh with Indian military, economic and political support, confirming worst fears that India was determined to undo totally the creation of Pakistan. In addition were fears of a growing resource gap with India, and serious concerns about the credibility of defence alliances and the adverse fallout of economic and military sanctions imposed by the United States and other Western powers. Moreover, Pakistan was convinced that its powerful neighbour and adversary India had already acquired nuclear weapons, and feared that none of the existing nuclear powers would be likely to provide extended deterrence.

In the early 1970s, the cumulative effect of these factors provided Pakistan’s decision-makers with the raison d’être to pursue an independent nuclear programme and muster a punitive capability sufficient to dissuade by deterrence an adversary that they could not expect to dissuade by defence alone. Unlike India, whose nuclear policy was more for prestige and global
recognition, Pakistan’s programme was primarily motivated by security considerations. It also became clear from the very beginning that India would set the pace of nuclearization in South Asia, as the key referent in the regional nuclear arms build-up.

**Pakistan’s rationale for going nuclear**

Pakistan’s policy-makers came to the conclusion that security could only partly be protected through a deliberate policy of friendship with major powers, and that Pakistan would have to rely on its own strength. The events of the 1971 Indo-Pakistan War over erstwhile East Pakistan had clearly demonstrated that neither China nor the United States could be expected to intervene on behalf of Pakistan or provide extended deterrence in case of a future Indian invasion or nuclear intimidation. Although Pakistan enjoys a special relationship with China and considers it as a highly dependable ally, there are limits to the circumstances under which it could support Pakistan in a conflict with India. With the Chinese power growing, its range of interests could be expected to broaden – and Pakistan’s strategic importance would lose much of its exclusivity and bi-partisan orientation.

Moreover, India was getting closer to the Soviet Union and had signed the substantive Indo-Soviet Treaty in 1970, perceived among the strategic community as a veiled agreement to extend Soviet deterrence to India. The Soviet Union and the European countries were also selling weapons and equipment to India while denying this to Pakistan, widening the conventional gap and heightening its insecurities. Dollar for dollar, the Indian defence establishment could also buy more weapons, as there were no sanctions imposed on it.

Influenced by these disturbing developments, Z.A. Bhutto, then Prime Minister of Pakistan, conceived and initiated the country’s nuclear programme and directed the Atomic Energy Commission and Kahuta Research Laboratories to undertake the military nuclear programme on high priority (Perkovich 1999: 171–2). As far back as in the mid-1960s he made the oft-quoted remark: ‘If India developed an atomic bomb, we too will develop one even if we have to eat grass or to remain hungry, because there is no conventional alternative to the atomic bomb.’ India’s detonation of a nuclear device in 1974 further heightened Pakistan’s insecurities and set the tone for its reactive nuclear policy.

Following the logic of the five original nuclear powers (the P-5) and even more so of India, Pakistan’s policy architects came to the conclusion that the nuclear deterrent was the most effective way of ensuring the country’s territorial integrity and political independence. Prime Minister Zulfiqar Ali Bhutto, in 1974, led Pakistan on the nuclear path at a fast pace, setting aside high-priority development goals that were bound to be affected. As a developing country with a limited technological and industrial base, Pakistan initially had to import and then gradually build its own expertise in nuclear-related technologies. Nonetheless, over the years it managed to achieve a high level of autonomy in the production of nuclear weapons.
From ambiguity to declared nuclear status

Following the 1971 loss of East Pakistan and until Pakistani scientists and engineers successfully completed the enrichment of uranium in 1987 and also acquired the capability of manufacturing weapon systems, Pakistan pursued a policy of deliberate ambiguity, trying to keep all its nuclear activities under wraps. This was to prevent the country from being subjected to severe international sanctions, and to avoid international isolation. Moreover, policy-makers were of the view that several nuclear-weapon states had acquired nuclear capabilities by surrounding their activities with disinformation.

The policy, however, did not work that satisfactorily. In 1976, during Prime Minister Bhutto’s period, Pakistan tried to acquire a reprocessing plant from France. It soon became clear that this facility was not required, as Pakistan’s civilian nuclear programme was based on a Canadian natural uranium power reactor. France, acting on the basis of its intelligence sources and under strong US pressure, decided against the contract. Concurrently, Pakistan was acquiring technology and hardware for a uranium enrichment plant through Dr A.Q. Khan, who, as a metallurgist, had worked at the Urenco centrifuge plant in Almelo, the Netherlands. He brought with him detailed designs and lists of critical component suppliers. Information now in the public domain indicates that firms in Western countries also provided the design and critical electronic and measuring equipment, and special alloys for the centrifuge (Spector 1990). The build-up of the Kahuta enrichment facility was done at a fast pace, and a clandestine network was established to procure from nuclear-advanced countries plant and equipment that could not be produced indigenously. Through a similar process during this period Pakistan also set up the Dera Ghazi Khan Uranium hexafluoride plant and procured high-quality milling and other specialized machines from Germany and Western Europe.

Meanwhile, Pakistan had developed a fairly substantial cadre of nuclear scientists and engineers who contributed towards the build-up of nuclear infrastructure and the assimilation of modern technologies acquired from open and clandestine sources. President Zia-ul-Haq and others followed the same policy of ambiguity. In the 1980s, Zia was very careful to maintain good relations with the United States, as the two countries were closely allied during the Afghan Jihad. At times, to counter US pressure, Zia would project the nuclear programme as being totally civilian in character. Outwardly, he also tried to de-link Pakistan’s nuclear programme with India, but there were several inconsistencies in this policy. On issues such as the signing of the NPT or renouncing nuclear weapons, Pakistan took the position that this would be contingent upon India’s taking the lead. While negotiating economic and military aid packages, President Zia-ul-Haq sidetracked US demands for providing verifiable assurances that Pakistan would not produce nuclear weapons.

As Indian assertions of power grew and its interest in seeking a negotiated settlement of Kashmir and other issues faded, and confidence in the United States wavered, Pakistan initiated and pursued a nuclear-weapons programme.
with determination. Had the international community paid greater attention to conflict resolution than to conflict management, Pakistan might perhaps not have been motivated to pursue the nuclear path. Alienation of the Kashmiri people heightened tensions between India and Pakistan and led to the build-up of conventional forces, as well as the desire to pursue the nuclear path.

By the second half of the 1980s Pakistan had developed a few nuclear bombs. Once the country’s leaders were confident that the nuclear-weapons programme had reached a level of maturity, they started giving indications that Pakistan now possessed a nuclear capability, and the foreign press picked up on this (Woodward 1986). In 1987, India conducted the major military exercise Brass Tacks in close proximity to the strategically sensitive area of Sind, and there were indications that it was seriously considering a strike on Pakistan’s nuclear facilities (Perkovich 1999: 240, 280). Pakistan reacted by signalling to India through unofficial media channels that it had succeeded in producing nuclear weapons. In this way Islamabad sought to remove the uncertainty and confusion that surrounded its nuclear programme, wanting to give a clear signal of nuclear deterrence to India and the rest of the world. In 1990 tension between India and Pakistan resurfaced on the question of Kashmir, and fears of a potential nuclear conflict brought in the United States to advise restraint on both sides. However, relations with India remained tense and hostile throughout the 1990s, and the Pakistani leadership began placing reliance on deterrence to countervail its adversary.

After the nuclear tests by India in May 1998, Pakistan followed suit: within two weeks it tested its own devices, thereby transforming its ambiguous position into a more explicit posture. It was a constellation of factors that had made Islamabad follow New Delhi in going overtly nuclear. Strategic concerns, perceived security interests, domestic compulsions and international considerations all led to the taking of this decision. There was immense domestic pressure put on the government by politicians and the scientific community. Initially, the military leadership was somewhat ambivalent, as it was not sure whether a counter-test was necessary on technical or military grounds, and expected the consequences to be very heavy. Nonetheless, consensus soon emerged that a tested Pakistani nuclear arsenal would remove doubts of its functionality, and that international condemnation would be short-lived (Ahmed 1999).

Soon after India’s tests, Pakistan did come under enormous pressure from the United States and the other P-5 countries to refrain from testing. To this, Islamabad responded that Pakistan was not a signatory to the Comprehensive Test Ban Treaty and could not be expected to comply with it. More significantly, Pakistan wanted to convey to the world that it could not remain idle to the growing nuclear capability of India. It also feared nuclear blackmail from India, and Indian Home Minister L. K. Advani’s provocative statement that India was now in a position to teach Pakistan a lesson only heightened Islamabad’s insecurities. There is no doubt that India’s hard-liners Advani and Defence Minister Fernandes had pushed Pakistan into testing. Deliberate intelligence leaks indicated that India in collaboration with Israel was contemplating an attack on
Pakistan’s nuclear installations. Moreover, doubts existed in certain quarters abroad and at home that Pakistan’s nuclear programme was only in its infancy and it was time to call the bluff. India was giving air to these perceptions, and Islamabad decided that it was necessary to conclusively demonstrate to the world – and to India in particular – that Pakistan possessed the capability (Tellis et al. 2002: ch. 3).

Over the years, Pakistan had invested enormous political, economic, technological and scientific resources in responding to the Indian nuclear challenge and it could not remain in the shadows, even if this meant paying a heavy price. While scientists and engineers took nearly two weeks to prepare the testing site at Chagai Hills in Baluchistan, built more than a decade earlier, the government launched a media campaign to develop national consensus in support of the tests. Media blitz both in India and Pakistan hyped up nuclear nationalism, making it difficult for any substantive resistance on nuclearization to emerge.

The people generally supported the decision to counter-test, for them apart from security considerations it also became an emotional issue. No formal opinion polls were taken, but the densely populated and important province of Punjab fully endorsed the test option. This partly eased government’s task of taking the controversial decision and overriding the difficulties that arose in consequence of the tests. President Clinton, as required by law (including the Glenn Amendment, part of the Arms Control Act), declared sanctions on Pakistan, and the G-8 countries followed suit by cutting off economic assistance. Pakistan’s already fragile economy came under additional pressure.

The Security Council also passed Resolution 1172, condemning India and Pakistan for conducting the nuclear tests of May 1998. On the basis of the contents of the UNSC resolution, and in light of its own goals, the United States established several ‘benchmarks’ for these countries to comply with. These included signing and ratifying the CTBT, halting production of fissile material and participation in the Fissile Materials Cut-off Treaty, limiting the development and deployment of WMD delivery vehicles and tightening the export control regime. But whereas the sanctions on India were removed already in October 1999, they were not lifted from Pakistan because of the military takeover. Washington made it clear that sanctions would remain in place until a democratically government took power. It was only after Pakistan joined Bush’s war on terrorism and became a ‘front line’ ally that the United States lifted or waived various sanctions and the multilateral agencies and other Western countries resumed their support. The United States has since become reconciled to the nuclear-weapons capabilities of India and Pakistan, and now considers these as a fait accompli to be managed rather than rolled back (Miller and Scheinman 2003).

Embracing nuclear deterrence

The strategic and economic rationale for Pakistan’s doctrinal embrace of nuclear deterrence was based on certain assumptions. During periods of US-imposed
sanctions, Pakistan tried to maintain the conventional balance with India by procuring major weapon systems from China and other sources. However, this increased the qualitative gap between the two South Asian rivals, as the equipment from these sources lagged one or two generations behind the Western and Russian equivalents to which India had easy access. India has also enjoyed the distinct advantage of having a relatively developed defence industrial base.

Dissuasion by nuclear deterrence in addition to normal conventional defence hence became the keystone of Pakistan’s security policy. Defence planners were of the view that an independent nuclear deterrent was Pakistan’s security insurance (even if at a high cost) against India. The military and bureaucratic establishment of Pakistan believes that, in order to restrain India’s hegemonic ambitions, it is crucial for Pakistan’s nuclear threat to remain credible. US willingness to sell and co-produce a wide range of the latest weapon systems, including the next generation of multi-role combat aircraft, will further strengthen India’s military capability, thereby compelling Pakistan to place even greater reliance on nuclear deterrence (US Department of State 2005). The conventional gap is likely to grow, due to major acquisitions by India from the United States as a consequence of the signing of the ten-year defence agreement between the two countries (‘New era . . .’ 2005).

The effectiveness of Pakistan’s nuclear deterrence rests on the premise that there is no worthwhile objective for India to attain at an unacceptable cost of millions of casualties and massive destruction of key areas. Pakistan would inevitably riposte when, or if, it is strategically outmanoeuvred in conventional warfare or its logistic resources run out. Despite the on-going peace process, Pakistan’s nuclear deterrence will be determined by the escalatory steps taken by India (Akram 1998). Furthermore, under extreme stress involving a threat to national survival, Pakistan’s behaviour could be unpredictable.

The Pakistani nuclear doctrine

Formally, Pakistan has not announced its nuclear doctrine, but has spelled out certain salient features of it in the form of declaratory statements. It does not subscribe to the no-first-use (NFU) policy and has chosen to remain ambiguous (Schelling 1994). Pakistan also maintains: “No-First-Use” has never been accepted as the basis of determining the deterrent postures of any of the Nuclear Weapon States’ (Akram 1999; see also Bowen and Wolvén 1999). It feels that accepting a nuclear NFU policy would leave it highly vulnerable to the possibility of being overrun by India in a long-drawn-out future conventional war. Islamabad has wanted to retain the right to launch a nuclear strike in case vital national interests are threatened.

Islamabad is developing a credible nuclear arsenal that should bolster deterrence and not be an easy target for pre-emption. Despite India’s no-first-use doctrine, Pakistan maintains that it has to develop a potentially survivable retaliatory force. By building a credible nuclear force it would make India believe that it cannot pre-empt all its nuclear missiles and assets that are well
dispersed, carefully stored and protected and capable of launching a retaliatory attack. Dispersion, however, has its own problems of command and control and would require a pre-delegation of authority to launch nuclear weapons.

Red lines or trip wires have not been defined, and a certain amount of ambiguity has deliberately been retained (Shahi 2000). But, from piecing together occasional declaratory statements by various leaders of the government, including the Foreign Minister and the chief of the Strategic Planning Division, it may be assumed that a major loss of territory, severe degradation of the armed forces in an armed conflict, massive destruction of cities and economic infrastructure, economic strangulation or blockade would constitute crossing the Rubicon. Senior defence officials have argued that if Pakistan is close to losing a war and finds its survival at stake, it may be forced to use the nuclear option. Essentially the unfavourable balance in conventional forces with India is the rationale that has led Islamabad to reject the NFU policy.

Given Pakistan’s lack of strategic depth, a major military offensive by larger Indian conventional forces could make a deep thrust into its territory and threaten to cut off major road and rail links between the north and south of the country. It could therefore be assumed that Pakistan’s nuclear doctrine does permit first use even in a conventional war, under extreme circumstances. This is in fact no different from the NATO, France, Russia and US NFU policy (under the new doctrine) (Mendl 1970).

The warning implicit in this declaration is that India should be prevented from exploiting its superiority in a critical theatre of war. In fact Pakistan’s relative weakness and sense of insecurity, being the smaller power, can make it more offensive-oriented during a crisis. It further implies that the safety margin for India of any significant offensive conventional use of military force against Pakistan’s territory is very limited. The belief, strongly held in certain sections of the military and rightist political parties, that the Indian leadership after nearly sixty years has not become reconciled to the existence of Pakistan may incline the military and political leadership to be more flexible in determining the nuclear threshold, which could be highly destabilizing and dangerous.

Another consideration for Pakistan to reject the NFU concept is the perceived numerical superiority of India’s nuclear forces. In the event that India should resort to a first strike, notwithstanding its NFU doctrine, the damage to Pakistan’s nuclear forces could be such as to undermine its ability to respond effectively. Policy analysts are also apprehensive that India could easily stray from NFU and second-strike doctrine, as it has already introduced several caveats including nuclear retaliation against the use of chemical and biological weapons. Then there is always the possibility that India might be tempted to take out Pakistan’s nuclear assets. There was a mistaken belief among certain members of the strategic community in India that its ‘no first use’ doctrine will reduce the pressures for nuclear escalation between India and Pakistan, which has proven contrary to experience.

The second feature of Islamabad’s undeclared doctrine is integration of conventional and nuclear forces. Pakistan’s strategic nuclear policy is linked to its
conventional defence policy, force structure and operational plans. Pakistan believes that its conventional forces are capable enough to hold back the advance of an Indian offensive for sufficient length of time to give outside powers an opportunity to intervene diplomatically, preventing a nuclear exchange. New Delhi too would like to limit its offensive, knowing the consequences of risk entailed in nuclear escalation, even if there is no apparent threat to its nuclear forces. Clearly, Pakistan’s strategy is to deny India the option of waging a conventional war by showing its resolve to expand the conflict to the nuclear level and to be prepared to pay an unbearable cost. Conventional forces may be required to provide protection to the nuclear forces during their movement, and close coordination between the two is essential at the operational level.

Third, Pakistan’s military and political leadership has repeatedly stated that it subscribes to ‘minimum deterrence’. In an interview in March 2003, President Musharraf stated: ‘Minimum credible deterrence remains the cornerstone of our security policy and toward that end we have defined and quantified for ourselves the notion of minimum deterrence’ (Musharraf 2003). Despite these assertions, Pakistan’s nuclear deterrence would for years constitute a still-evolving process, the dynamic of which would depend on the nature of the qualitative and quantitative threat from India. The hard reality is that India’s energetic acquisition of sophisticated new weapon platforms and pursuit of missile defence systems from Russia, Israel and the United States could accelerate the arms race and destabilize the region.

A further destabilizing factor lies in India’s endeavours to establish a dominant military edge in the presence of nuclear competition (Krepon 2003). Technology trajectory is a major driver in the dynamics of deterrence between the two countries. Both are trying to improve their nuclear warheads as well as their delivery systems. Foreign intelligence estimates indicate that Pakistan currently possesses enough fissile material, mainly enriched uranium, for between fifty-five and ninety nuclear weapons; India, with a programme focused on plutonium, may be capable of building a similar number (‘Congressional Research . . .’ 2005). However, opinion varies as to the number of weapons in each state.

The future size of Pakistan’s nuclear arsenal is likely to be determined by the nature of the employment doctrine, the availability of fissile material, the capacity to build or acquire delivery systems and India’s nuclear arsenal (Ahmed 1999). Pakistan seems to have adopted counter-value targets as its strategy. It would probably target four or five major cities, major industrial complexes and communication and command centres. In all likelihood, India would do the same.

On the other hand, a counter-force strategy would require Pakistan to deploy tactical nuclear weapons and adopt a nuclear war fighting strategy. This raises the problem of accurate intelligence collection and collation, with the distinct possibility of India escalating the conflict (Chari 2001). In this situation, managing escalation would be the most difficult task. Pakistan would have to either respond rapidly against Indian counter-force targets, or threaten India with
destroying counter-value targets. Because of the close proximity of the two countries and Pakistan’s lack of strategic depth, rapid decision-making would be required, and that could force Pakistan to use nuclear weapons on a ‘launch on warning’ basis – a dangerous prospect. Retaliatory Indian tactical nuclear use, especially in densely populated regions like Punjab, could be strategically disastrous for Pakistan.

Another strategy could be to follow the French concept of firing one or two nuclear warning shorts against isolated invading Indian armoured columns or, in the event of a naval blockade, striking at one of the ships blockading Karachi port (Yost 2005). This policy could be a step towards more limited nuclear employment that might reinforce deterrence by informing India that Pakistan has options other than an all-out nuclear attack, which in the event would surely invite a devastating Indian response. A mix of counter-value and counter-force targets could be a part of Pakistan’s evolving targeting strategy, according to Dr Zafar Cheema (Cheema 1999).

**Major elements of Pakistani nuclear policy**

Pakistan’s nuclear forces are organized as deterrence against aggression, whether conventional or nuclear. In the event that an Indian conventional attack reached an unacceptable threshold, Pakistan could use the nuclear option as a last resort. Islamabad’s retention of the first-use option is meant to deter India against a massive conventional attack. And officials have hinted that there would be an appropriate response if red lines were ever to be crossed. Ever since the country’s command and control structure was established, the government of Pakistan has repeatedly emphasized that its nuclear deterrent is credible and survivable, suitably designed for the operational requirements of its strategic forces, its employment doctrine and its deployment strategy.

The planning, development and employment of Pakistan’s nuclear forces are handled exclusively by the military. On 6 January 2003, the NCA announced that a ‘unanimous decision’ would be taken for using nuclear weapons, and that no individual – not even the President of Pakistan – is authorized to use nuclear weapons. Ultimate authority over nuclear employment rests with the members of the NCA and not with the President alone. Nonetheless, this announcement has not been backed by separate legislation or constitutional provision.

In the case of Pakistan, and also India, the question remains: what if the top-level command personnel should be taken out by the enemy’s first early strike? Preparing for this eventuality would require authority for use to be pre-delegated down to a certain level in the operational chain of command (Shahi 2000; see also Cohen 1991). Once democracy is fully established in Pakistan, the country’s nuclear forces should come under civilian political command and control, in time of peace and of war. Ironically, in the current political scenario, and for reasons of physical security and operational control, the world and the strategic community within Pakistan would prefer the existing state of military dominance to a weak or religious-oriented civilian option.
Pakistan, moreover, seems to be developing a second-strike capability for strengthening deterrence. All this could lead to a dynamics whereby both countries continue to build their nuclear arsenals, and it is not clear at what stage they would stop. If experience of the P-5 is any guide, then capping of arsenals at a certain stage would be necessary to stabilize the nuclear regime. Unlike India, Pakistan is not contemplating having submarine-launched missiles as a part of its nuclear force in the near future. High cost, non-availability of nuclear submarines and different strategic goals are the main reasons for this low priority to sea-based nuclear missile capability. However, this option cannot be ruled out if the vulnerabilities of Pakistan’s land-based systems to pre-emptive attack should increase, altering the strategic landscape in India’s favour.

Officials claim that Pakistan’s deterrence strength lies in its preparedness and determination to use nuclear weapons in retaliation, and that its nuclear forces check India from rashly launching any war of aggression or resorting to nuclear blackmail. When India mobilized forces on the Pakistan border (from December 2001 to October 2002), in response to the alleged terrorist attack on the parliament, and later withdrew them without any significant political or military gains, this was widely perceived as reaffirming Pakistan’s strategy of dissuasion by nuclear deterrence.

Pakistan’s policy is not to use nuclear weapons against non-nuclear states. Islamabad remains committed to arms control and non-proliferation, which are non-discriminatory. It affirms that it will not transfer nuclear materials, related technologies or know-how to any state or non-state entity. Pakistan has tightened up its export control regime, introduced legislation that conforms to stringent international standards and has committed itself to faithful implementation and enforcement (Gazette of Pakistan 2001).

As a non-signatory to the NPT and the additional Safeguards Agreement, it cannot be a member of the Nuclear Suppliers Group; still, Islamabad has shown its willingness to cooperate and accept the obligations associated with the regime. The official position taken by Islamabad is that it looks forward to engaging NSG partners in a constructive dialogue; and there were some exchanges, formal and informal, in 2005. Pakistan is likely to support efforts to strengthen the Convention on the Physical Protection of Nuclear Material, to which it is already a party. Subsequently, it may also extend the provisions of that Convention to cover physical protection of nuclear materials for civilian purposes.

Indeed, Pakistan maintains that as a responsible nuclear state it has ensured the safe custody of its nuclear assets, both during peace and in time of crisis. Pakistan also claims that it has taken effective measures against any accidental or unauthorized launch. Security is being made foolproof, to prevent fissile materials and weapons from falling into the hands of unauthorized personnel or terrorists with the use of seismic, magnetic and acoustic sensors coupled with secure communication links. Despite technological and economic constraints, Pakistan is trying to develop an efficient warning system to prevent possibilities of miscalculation.
As a part of the peace process, India and Pakistan have agreed to establish between the two foreign secretaries secure communication links, to be used also for notifying the other side of events on its territory that might be misperceived and lead to conflict (‘Congressional Research ...’ 2005; see also Krepon and Haider 2004). The two countries fell short of establishing dedicated Nuclear Risk Reduction Centres, but the inter-ministerial communication links represent a significant confidence-building measure that can reduce the chances of nuclear conflict through accidental and unintentional launch, and as such must be recognized as a major step in responsible nuclear stewardship.

**Nuclear force structure**

Pakistan’s nuclear force consists of nuclear-capable combat aircraft and solid-motor and liquid-engine short- and medium-range ballistic missiles. The bomber fleet comprises French Mirages and US-built F-16s, modified and modernized to deliver nuclear warheads. In operational terms, aircraft are considered to have an edge over missiles due to their ability to carry greater payload and their wider combat radius.

Pakistan’s missile programme is based on the strategic requirement of having a diversified and survivable nuclear deterrent that can reach the furthest targets in India. Its missile programme is essentially India-centric, developed in response to India’s growing missile muscle and ambitious space-launch programme. Pakistan’s land-based system consists of both short- and intermediate-range missiles tipped with nuclear warheads and mounted on mobile platforms; these are manoeuvrable in various types of terrain and should be relatively survivable. Survivability and secrecy are absolutely critical for retaining the deterrent capability of Pakistan’s nuclear forces. Mobile platforms require a greater degree of maintenance and more elaborate safety systems.

Pakistan places great reliance on surface-to-surface missiles and has built up a comprehensive range of missiles that can cover all major targets, including the southern cities of India. In the early development phase, Pakistan benefited from cooperation with certain entities from China and perhaps from North Korea as well. Also India benefited from the extensive cooperation extended to it by the US National Aeronautics and Space Administration in the 1960s and early 1970s and from the space industries of the former Soviet Union, France and the United Kingdom. Over the last two decades, and largely through its own efforts, Pakistan has developed a sophisticated indigenous capability covering design, manufacture of missile components, guidance and control system. It has made great strides in the manufacture of special-grade alloy steels, composites and high-energy propellants.

The successful testing of its enhanced-range missiles shows that Pakistan has been able to master long-range rocket motor development and the problems associated with re-entry and guidance. It now has a sufficient number of well trained nuclear and aerospace engineers and scientists who can sustain the country’s missile and nuclear programmes. On 11 August 2005, the NCA
announced the successful test-firing of the indigenous-built cruise missile Babar, with a range of 500 km and capable of firing both conventional and nuclear missiles (‘National Command Authority announces . . .' 2005). This implies that the missile could target the Indian cities of Delhi, Amritsar – and, if launched from sea platforms, Bombay and other coastal cities. Cruise missiles would provide Pakistan with the option of using them in a tactical as well as strategic role.

The main reason for the dominant role of missiles in Pakistan’s nuclear force is the US refusal (since 1990) to sell combat aircraft. In a change of policy, Washington agreed to sell F-16 fighter aircraft. Some European countries like France too may be willing to sell multi-role aircraft, but at exorbitant prices that Pakistan can ill afford, or the Swedes the Gripen-39 – with power plant and avionics from the United States and which cannot be sold without its concurrence. By contrast, India’s current and proposed procurements include fourth-generation fighter aircraft from Russia and Western sources, including the United States. The US offer of sale and co-production of F-18 Hornet E/F series to India will bring a qualitative shift in its delivery systems. With the help of Israel and the United States, India is also developing a long-range reconnaissance capability and a sophisticated air defence system that may be difficult to penetrate.

The Ghaznavi, Shaheen-I and Ghauri are in operational service with the Pakistan Army. The intermediate-range Shaheen-2 (1,200–1,500 km) and Ghauri-2 (2,500 km) are undergoing tests and trials and will be fully operational in a year or two. Like India, Pakistan does not keep its ballistic missile force on operational alert, and its missile force and nuclear warheads are stored separately for safety and security. It is believed that the warheads are kept in disassembled form ready to be assembled at a short notice during a crisis and then mated to the missiles. Analysts characterize this readiness posture as ‘virtual state of de-alert’. This is not as threatening as when missiles are actually on launchers, deployed in forward areas and in high state of readiness.

During times of crisis, both countries have deployed their missiles in a bellicerent posture as a part of strong political signalling, to show resolve in crisis situations and build domestic morale. Both countries should avoid deployment of nuclear weapons, as that would result in lowering the nuclear threshold (Ramana 2003; see also Sagan 1993). India and Pakistan also keep conducting ballistic missile tests during crisis situations at frequent intervals – sometimes in a tit-for-tat sequence, indicating an action–reaction dynamic at play. India was test-firing its short-range Agni missiles during the January 2002 large-scale mobilization, to which Pakistan reciprocated by firing its Saheen and Ghauri medium-range missiles.

The current state of ‘de-alert’ is perhaps the best course for the two countries in the prevailing situation. Any attempt on the part of one country to raise the level of alertness will invite a similar response from the other and lead to instability and heightened tensions. There is a need to negotiate a formal agreement on non-deployment of nuclear forces and also not to operationally weaponize nuclear-weapon systems, whether missiles or aircraft (Khan 2003).
Both India and Pakistan have implicitly stated that their nuclear build-up is intended to attain minimum nuclear deterrence. No doubt this is a substantially scaled-down version of the massive urban/industrial retaliation envisaged in the US nuclear doctrine of the 1950s. Nonetheless, deterrence being a dynamic concept, it appears that both countries are silently engaged in a strategic arms build-up (if not a race) and are moving toward bigger arsenals, the pace of which is governed only by economic and technological constraints. India’s ambitious nuclear doctrine of a triad and its emphasis on building its arsenal to allow for the Chinese factor impel Pakistan to react by building larger inventories to maintain the balance. India’s security planners consider China to be a long-term strategic adversary seeking to ensure that India remains engaged within the region (Goldstein 2002: ch. 3).

Pakistan has put in place a credible deterrence strategy involving counter-value targets (covering probably five large cities in India), command and communication centres and one or two targets of great strategic value. In its view these could represent an unacceptable level of punishment. Pakistan thus has premised its deterrence on assured retaliation and the targeting of cities and high-value strategic targets. It aims at ensuring the survivability of its own nuclear forces by mounting nuclear-tipped missiles on mobile platforms. Institutionally, Pakistan has integrated its three services in the planning and operational deployment of its nuclear forces.

Completed weaponization will add a new dimension to the demands on crisis stability. After the nuclear tests of 1998 it has become difficult for India and Pakistan to reach formal agreement on not mating warheads and missiles in normal times, as this would require agreement on verification by neutron detectors or other means. All this can be possible only if the on-going ‘peace process’ can move to an advanced stage where mutual trust between the two countries has been established.

**Nuclear disarmament**

Notwithstanding the specifics of Pakistan’s nuclear programme and India, its long-term objective remains to pursue the goal of both regional and global disarmament. It will not accept the monopoly of a few countries to possess nuclear weapons. In 1974, Pakistan introduced a major nuclear disarmament proposal in the UN General Assembly, in which it proposed a nuclear weapon-free zone in South Asia. This proposal was brought up in successive UN sessions, but India constantly rejected it, on flimsy grounds.

Pakistan has since made several nuclear disarmament proposals – including the 1978 proposal that India and Pakistan jointly renounce the acquisition and manufacture of nuclear weapons, and in 1979 that both countries subject their nuclear facilities to IAEA inspections. It also proposed in 1979 that both countries join the NPT (Khan 2005; see also ‘Pakistan reiterates offer . . .’ 2004). Regrettably, all these proposals were rejected by India on the pretext of China or that these proposals were too region-centric. The idea of nuclear disarmament
has now become irrelevant, as both India and Pakistan are nuclear-weapon states with no likelihood of a rollback. Pakistan’s doctrinal first-use option, directed against Indian conventional superiority, further negates possibility of disarmament.

By agreeing to provide assistance to India’s civilian nuclear energy programme, the United States indicates that it has tacitly recognized India’s nuclear status (‘Indo-US Agreement on cooperation . . .’ 2005). Pakistan expects the United States to adopt an evenhanded and non-discriminatory policy on the transfer of nuclear and space technologies for peaceful purposes.

These differences notwithstanding, in 1988 India and Pakistan agreed to sign an agreement on non-attack on each other’s nuclear facilities. This agreement has held in good stead, and lists of nuclear installations have been regularly exchanged on 1 January each year.

Pakistan officially maintains that a world free of nuclear weapons will enhance its own as well as global security. Ironically, these goals are not very different from what India, or for that matter China and even France, claim for justifying their nuclear ambitions. But one must question whether this is in fact a cover by all these nuclear haves to pursue their nuclear aspirations – or a genuine yearning for a nuclear-free world. The failure of the United States and the former Soviet Union (and now Russia) to place before the world a credible plan for nuclear disarmament is a major stumbling block in the reduction of nuclear dangers.

Proliferation challenges

The proliferation activities of A.Q. Khan have enormously damaged Pakistan’s reputation, have been a source of grave concern to the international community and a huge embarrassment to the government. The international community was particularly incensed to learn that Khan and his foreign associates had developed a well integrated network that was capable of providing a wide range of nuclear-weapon technology and equipment and working in more than thirty countries. The most troubling and dangerous aspect of Khan’s activities was that he was capable of providing a one-window operation because of his unique position in Pakistan’s nuclear programme. Former US Secretary of State Colin Powell, testifying before Congress in February 2004, said the US and British intelligence agencies had worked together for years to ‘uncover one particular nefarious network, that of Mr A.Q. Khan’. This network had been providing nuclear technology to Libya, Iran and to North Korea.

During a visit in 2003 to a nuclear facility in Natanz in central Iran, IAEA inspectors found a centrifuge facility. It was later determined that some of the centrifuges in this facility came from Pakistan and had traces of highly enriched uranium. According to a New York Times report dated 2 February 2004, a senior Pakistani official in a briefing to the journalist admitted that Khan had transferred centrifuge technology to Iran from 1989 to 1991. It is also believed that the Khan network facilitated the nuclear enrichment programme of North Korea.
In October 2003, the United States with the cooperation of its allies uncovered a shipment of Khan’s network carrying centrifuge parts made in Malaysia and destined for Libya. Experts from the United States and the IAEA uncovered blueprints for a 10 kt bomb from the Libyan documentation, but the source of supply of this document has not been confirmed. Unauthorized assistance to Libya from A.Q. Khan began in the early 1990s and lasted for nearly a decade, during which Libya received technology, components and centrifuges.

The disclosure by the former Dutch Prime Minister that the CIA advised his government in 1974 not to arrest A.Q. Khan because they (the CIA) were keeping a track of his activities is somewhat intriguing. CIA Director George Tenet also stated that US intelligence had penetrated Khan’s network (Tenet 2004; see also Pregenzer 2003; Broad and Sanger 2004a). But why did the CIA take so many years to bring this to international attention, and how could they have failed in tracking the crucial transactions?

Pakistan’s former chief of the army staff, and other government functionaries, have refuted allegations of complicity in transferring nuclear technology to Iran in 1990. It is, however, inconceivable that the shipments of centrifuges to Iran and clandestine transactions with North Korea or Libya were merely a rogue operation, done without the complicity of the top brass at that time. The government has so far failed to give a satisfactory explanation to the people of Pakistan as to how for several years such activity could take place in an organization which is so sensitive and tightly controlled by the military and intelligence agencies. All inquiries and investigation by the Pakistani government were done discreetly and were not brought into the public domain.

In view of the populist image that Dr A.Q. Khan enjoyed in Pakistan – due partly due to his contribution in the development of the centrifuge enrichment process and also the result of the myths woven round him for years by successive governments – it was considered expedient not to formally try him in a court of law for exporting technology and equipment to foreign countries. Instead he has been to all intents and purposes placed under house arrest and not allowed to meet any one apart from his immediate family members.

The government claims that it is cooperating fully with the IAEA and the United States in tracking the network that was engaged in non-proliferation activities. The United States would have liked to be more directly involved in the investigation but realizes the local sensitivity of the issue and how destabilizing that could be if pursued further. In an interview with New Delhi Television on 1 December 2005, the Director General of the IAEA, Dr Mohammed ElBaradei, applauded Pakistan for extending extraordinary cooperation with the agency on resolving many of the ‘pieces of the puzzle’ in the Iranian nuclear programme. Pakistan, nonetheless, has not been prepared to allow Khan to be directly interrogated by foreign agencies, or to accept any intrusive inspection of its nuclear assets (Akram 2004).

Islamabad has tried to redress the issue by tightening physical and materials control and monitoring closely the activities of personnel associated with the nuclear programmes. It is also introducing proven practices and available tech-
technologies to secure nuclear facilities and material. Moreover, in accordance with UNSC Resolution 1540, Pakistan has submitted its National Report, detailing the measures adopted for the safety and security of the material and technology meant for WMD. Comprehensive national legislation entitled ‘Export Controls on Goods, Technologies, Material and Equipment related to Nuclear and Biological Weapons and their Delivery Systems Act, 2004’ was enacted by the parliament in September 2004. This will help in further strengthening controls on sensitive nuclear technologies and materials.

Attitude of major powers

The United States and the Western world took a far tougher position towards Pakistan’s acquisition of nuclear weapons than with the case of India, and some are still not fully reconciled to it. The United States remained coercive in seeking to persuade Pakistan to abandon its nuclear programme, sign the NPT and open its nuclear facilities to IAEA inspections. However, this policy has been somewhat inconsistent, based more on realpolitik than any principles.

There is a strong perception in strategic community that there are several contradictions in Washington’s non-proliferation policy. It has scant justification for imposing sanctions or trying to persuade Pakistan to join the NPT as long as it continues to possess a large inventory of nuclear weapons that play a critical role in its own military strategy. Pakistan seeks a universal, non-discriminatory disarmament regime and not a selective application of nuclear norms.

Grudgingly, and as a quid pro quo to Pakistan for playing a pivotal role in the ‘war against terror’, the United States has become reconciled to accepting the nuclear reality of South Asia. In mid-1999 the Senate enacted legislation authorizing the US President to suspend sanctions on Pakistan for a period of five years, and removed restrictions on military sales.

The initial anger and frustration has given way to working with both India and Pakistan on promoting nuclear safety and stability in the region, without formally or legally endorsing it. US think-tanks have run workshops on establishing Nuclear Risk Reduction Centres, crisis management and personal reliability measures and, where legal impediments do not exist, have assisted in strengthening technical stability measures.

Taking a lead from the United States, the European Union and Japan too softened their opposition to Pakistan’s on-going nuclear programme. Japan, as the only country to have experienced nuclear bombing, was among the first to impose sanctions after the May 1998 nuclear tests. It suspended its US$500 million development aid and other economic assistance – as much an emotional as a political response. Since then, Japan has become reconciled to the nuclearization of South Asia and has resumed its development aid. However, it remains wary and very sensitive to the proliferation activities of Dr A.Q. Khan and his associates, particularly in connection with North Korea.

From the mid-1950s Pakistan enjoyed a very close relationship with China, which had contributed in building its defence capability, especially at a time of
sanctions from many countries. Both China and Pakistan officially deny any nuclear collaboration, however. Pakistan insists that its programme is totally indigenous and that, in some areas like centrifuge technology, it is ahead of China. The Western press has nonetheless averred that China has been supplying Pakistan with certain equipment and technology for its nuclear programme. In any case, Pakistan has undeniably reached a high level of technological autonomy. China has generally taken the position that, until there are global moves towards better nuclear and conventional arms control, it must build its military capability and support its friends to meet their genuine security needs.

Domestically the military establishment, political and religious parties, scientific community and the public are supportive of Pakistan’s nuclear programme and have seen it as a central pillar of the country’s security. There was a certain ‘romance’ associated with the nuclear capability, and successive governments in Pakistan, like their Indian counterparts, have made psychological investment in the programme that supposedly serves to cement national unity and pride. Initially there was hardly any taboo against nuclear weapons in South Asia, but due to the efforts of NGOs and civil society activists there has come a growing realization of the dangerous consequences of a nuclear conflict. Public support for the nuclear programme now is much more realistic and subdued than at the time of detonation.

**Pakistan’s policy toward treaties**

Pakistan voted in favour of the 1996 UN General Assembly resolution calling for the adoption of the Comprehensive Nuclear Test Ban Treaty (CTBT). After the six tests conducted on 28 and 30 May 1998, Pakistan, like India, has adhered to a self-imposed moratorium. During summit talks on the sidelines of the SAARC 2004 meeting, the leaders of both countries issued joint declaratory statements to refrain from testing. This position is likely to continue until such time as India resumes testing, whether on its own initiative or in response to any of the original five members of the nuclear club breaking the current freeze on testing.

The scientific establishment in India is apparently dissatisfied with this decision, as it imposes restrictions on their ability to refine the weapon design. At the time of the tests, missile designs had not advanced very much and integration of the missile and warhead had to be perfected. Many Pakistanis believe that accession to the CTBT would encourage the United States and other G-8 countries to push Pakistan to roll back its nuclear programme. Pakistan may also be interested in testing plutonium-based warheads. If Pakistan were to sign the CTBT without India and the United States also ratifying the treaty, that would invite severe criticism from domestic political forces and be perceived as capitulation. In fact, Washington’s indifferent attitude toward non-proliferation treaties (like the CTBT and FMCT) and its unilateral withdrawal from the ABM Treaty encouraged India and Pakistan to refrain from signing the CTBT.

From the perspective of Pakistani and Indian scientists, underground testing
is a far more accurate method of validating the performance of a new generation of warheads, as laboratory testing is still in its infancy. Moreover, the strategic community in India feels strongly that an effective and credible nuclear deterrent is possible only if it has high-yield thermonuclear weapons in its arsenal (Karnad 2002). Doubts exist about the successful detonation of the thermonuclear device that India tested in May 1998. Developing a fully reliable thermonuclear device against China remains India’s priority. In that event, Pakistan too would be motivated to develop a thermonuclear capability. Indian scientists also argue that India does not have the advantage of the other NWS of having access to data collected through years of testing for continued nuclear development. With such ambitious plans, India is unlikely to sign the CTBT. Thus there seems hardly any possibility that Pakistan would unilaterally agree to accede to the CTBT, even though it in principle supports the objectives and purpose of the treaty. On the other hand, if the United States and India were to accede, then Pakistan in all likelihood would follow suit.

Pakistan has officially expressed its willingness to participate in FMCT negotiations once these commence. It favours a universal, non-discriminatory, multilateral and effectively verifiable treaty that would ban the production of fissile materials for nuclear weapons or nuclear devices in accordance with the agreement in the Conference of Disarmament in Geneva (the Shannon Report). A future FMCT must address the question of asymmetries in existing stocks of fissile material at global as well as regional levels. For Pakistan, addressing the problem of regional asymmetry is critical. Such a treaty should serve the purpose of strengthening security of all states, irrespective of their size and status, as well as the goal of nuclear disarmament – rather than becoming only a nuclear non-proliferation instrument. But the possibility of FMCT negotiations starting in the near future seems remote, as there are major differences between the United States and China, the latter insisting that a treaty be linked with disarmament.

Pakistan, along with other G-21 countries, has taken a similar position: FMCT should be treated as a nuclear disarmament measure and not just a non-proliferation measure. It is also of the view that unless the treaty has a full verification regime and is transparent it cannot be effective (Hussain 2005). These developments aside, Pakistan, like India, will not stop production of fissile material until it considers the inventory levels to be sufficient for its nuclear strategy and that the treaty has universal applicability. ‘Sufficiency levels’ for Pakistan could imply fissile material for anything between 150 to 200 bombs.

Pakistan is not a member of the NPT. However, it claims that, being a de facto nuclear power, it should be given de jure status and treated as such. Islamabad holds the world must realize that Pakistan will not give up its nuclear capability, and that accepting it as a nuclear nation will strengthen the nuclear non-proliferation regime. Meanwhile, as a responsible nuclear state, Pakistan is prepared to accept most of the obligations undertaken by the five recognized nuclear powers: broadly speaking, this covers stringent controls on export of nuclear materials and technology, adherence to the moratorium on nuclear
testing, adopting the concept of ‘minimum deterrence’ and working toward a South Asian strategic stability regime. It has also committed itself to peaceful resolution of the Kashmir dispute, which should allay fears of any change in the status quo through military or covert means.

Pakistan has categorically stated that its acquisition of nuclear capability has no religious connotations. In return it expects technology assistance in areas of safety and civilian nuclear technology. Of late, Pakistan has also expressed its willingness to interact with the Missile Technology Control Regime (MTCR). Pakistan’s stated official position is that though it is not a partner in the MTCR, it adheres to the objectives of non-proliferation and would be ready to interact with the regime in a positive and meaningful manner. In return, Islamabad expects that regime members would agree to create a cooperative framework, based on Pakistan’s shared commitment to non-proliferation. In light of UNSC Resolution 1540, the United States and other Western countries could find a way of supplying equipment in order to improve the physical protection and control of nuclear facilities and materials and also assist in Pakistan’s civilian programme through technology transfer and co-development (Srivastava and Gahlaut 2003).

Meanwhile the Indo-US relationship is undergoing a qualitative change with serious security ramifications at the regional and global level. The agreement reached between President George W. Bush and Prime Minister Manmohan Singh during the latter’s visit to the United States in July 2005 would permit India to get international help for its peaceful nuclear programme while retaining its nuclear arms programme (see Bush and Singh 2005). In addition, the new US–India defence framework agreement has given rise to serious concerns in Islamabad, with fears that it could lead to advanced weapon systems in the region and the destabilization of the strategic balance in South Asia. The US–India agreement on civilian nuclear energy cooperation will contravene the control guidelines laid down by the Nuclear Suppliers Group and legitimize India’s de facto status as an NWS. Pakistan fears that India will divert peaceful nuclear technology to its nuclear-weapons programme. The US House of Representatives by a large majority endorsed the administration’s policy of amending legislation so as to enable India to receive nuclear cooperation, and Senate is likely to follow suit. That would prompt Pakistan to seek similar concessions from the nuclear powers (see ‘India and Pakistan agree . . .’ 2005).

In fact, in January 2006 a formal request was made during the visit of Prime Minister Shaukat Aziz to the United States, that Pakistan be allowed access to civilian nuclear technology and nuclear power plants. Washington appears unlikely to extend such cooperation to Pakistan, at least in the near future. This is likely to be viewed as discrimination, forcing Pakistan to draw closer to China for nuclear energy. If, however, at some stage the United States should agree to the proposal, then Pakistan should be willing to separate its military and civilian fuel cycles. As an NWS, Pakistan would be ready to engage the IAEA on the Additional Protocol, provided such a protocol excludes inspections of its dedic-
ated military facilities (as is the case with other nuclear states), and assist in providing access to nuclear technology for peaceful purposes.

**Impacts of missile defences**

India was the first country to welcome the US concept of National Missile Defence. It has been developing its own capability in this field by pursuing a two-track approach of indigenization as well as off-the-shelf purchasing. India has procured the Phalcon airborne early warning aircraft from Israel and the platform from the Russians, and also the S-300 PMU-1 and S-300 series from Russia. Concurrently, India’s Defence Research and Development Organization have developed a medium altitude anti-ballistic missile. India is interested in acquiring the latest Patriot missiles (P-3) from the United States, and negotiations are in progress for transfer of technology and co-production of ballistic missile defence systems.

India’s ambitious Theatre Missile Defence (TDM) programme, based on its own resources and active collaboration with the United States, Russia and Israel, is a source of concern to Pakistan, as it would weaken its conventional and nuclear deterrence. The latest version of the Patriot system could undermine the effectiveness of the entire range of Pakistan’s nuclear delivery systems – Shaheen and Ghauri ballistic missiles and F-16 and Mirage aircraft. Anti-tactical missile defence can destabilize the existing nuclear balance, and in a crisis situation could lower Pakistan’s nuclear threshold. It would take a few years before the entire weapon system could become operational in India, as the integration of various systems and different technologies is a difficult undertaking. Nonetheless, Indian plans for an Anti-ballistic Missile Defence System are likely to trigger an arms race with China and Pakistan, and could bring the two countries even closer to offset the emerging imbalance.

Moreover, the prospective deployment of US theatre missile defences in the Asia-Pacific region and Washington’s propensity to use force could serve as a powerful stimulus to the growth and transformation of China’s nuclear forces. This could provide India a cover to step up its nuclear programme – and, in all likelihood, Pakistan would respond to India’s build-up by enhancing its own nuclear forces. Pakistan could also develop multiple nuclear warheads and in the long term even build its own TDM system with Chinese assistance, if and when the latter develops it.

**Conclusion**

There is a potential of an escalating arms race between India and Pakistan, capable of casting a shadow on the on-going ‘peace process’ and negating the very spirit of it. It is therefore critical that New Delhi and Islamabad seriously engage in a dialogue on security issues and work for the establishment of a nuclear and conventional restraint regime. So far, only a few nuclear and conventional confidence-building measures (CBMs) have been agreed between the
two governments. Nuclear dialogue of an exploratory nature has also taken
place, both at the government and at the track-2 level: nuclear CBMs, develop-
ing a common strategic vocabulary and doctrinal issues have apparently been
discussed. Noteworthy among the nuclear agreements is the one signed in 1988,
relating to non-attack of each other’s nuclear facilities. This agreement requires
both countries to exchange lists of their nuclear facilities at the beginning each
year – and this has been implemented faithfully. Agreement on pre-notification
of missile tests has also been signed between India and Pakistan (in 2005), but
this agreement does not cover cruise missiles, which both governments now
possess.

Mutual fears of a nuclear war have prevented the two states from risking
another war – but how long can this balance be maintained on the basis of the
threat of massive retaliation? With the festering Kashmir problem always
lurking, there is the danger that an attack by militants could provoke India to
retaliate, eventually leading to the break-down of deterrence – with catastrophic
results. The modernization of the Chinese arsenal, the growing ability of Iran to
produce nuclear weapons and the uncertain strategic landscape of the Middle
East, may make deterrence even more burdensome to maintain. For this reason,
India and Pakistan need to address the issue of developing restraint regime with
a greater sense of urgency in the on-going peace and security dialogue.

India has always opposed the idea of a bilateral strategic regime with Pak-
istan on the grounds that it must take the China factor into consideration
(Schelling 2003). Beijing wants to be a global player, and it is aware that the
United States sees it as a potential adversary. Moreover, India also aspires to be
a global power and would not enter into any regional arrangements without a
move toward global disarmament. In consequence, Pakistan will have to work
out its own strategy of developing a credible minimum deterrence that is both
technically feasible and economically sustainable. However, it would be prudent
for Islamabad and New Delhi to engage in a wider debate, at some stage involv-
ing China to work out a strategic regime.

The absence of any arms control or restraint regime has compelled both
countries to engage in a silent arms race, which is destabilizing. Moreover, this
deprives India and Pakistan of resources that could be used for development,
education, health and fighting poverty. Establishing a conventional and strategic
restraint regime seems to be the best approach to improving bilateral security
and developing a framework for regional stability.

Notes
1 Dawn (Islamabad), 7 January 2003. On 6 January 2003, the National Command
Authority announced that a unanimous decision would be taken concerning the use of
nuclear weapons, and that ‘no individual, including the President of Pakistan, is
authorized to use nuclear weapons’. See also Cordesman 2002a: Pakistan’s nuclear
programme has been dominated by the military.
2 Squassoni 2004 notes that what is particularly egregious is the apparent ability of Khan
and his associates to provide ‘one-stop shopping’.
3 He *inter alia* said that ‘We have possession of quite a bit of it [Libya’s nuclear equipment] and we learned a great deal about A.Q. Khan and the other proliferators in the world’. Also see ‘Discoveries in Libya . . .’ 2004.

4 Sar Desai and Thomas 2002, quoting William Perry, former US Secretary of Defense: ‘The superpowers had avoided nuclear confrontation due to good luck; I only hope India and Pakistan will be lucky as well’. Also see Hassan 2003.
11 Non-state actors and nuclear proliferation

William C. Potter

National governments vary significantly in their assessment of global proliferation dangers. Although there is little consensus about what constitutes the most serious or imminent nuclear threat, an increasing number of governments see the danger in terms of non-state actors.

This concern is not entirely a new phenomenon: one can identify a small but influential body of policy-oriented and scholarly analyses on non-state actors and non-proliferation over the past three decades. However, these studies have generally represented a minority perspective limited to a small circle of experts in a few states and with little visible impact on the non-proliferation policies of national governments and international organizations.

This situation changed significantly in the aftermath of the attacks of 11 September 2001. Since then, there has been a major surge in research and government spending in several countries on many dimensions of weapons of mass destruction (WMD) terrorism, including a reassessment of the readiness and ability of non-state actors to resort to nuclear violence. Although this increased attention is a welcome development, as are many of the new national and international efforts to counter nuclear terrorism, it is not yet obvious that individual states or the international community have adequately comprehended the full range of proliferation challenges posed by non-state actors. Little headway appears to have been made toward developing a useful conceptual framework for analysing the proliferation risks of non-state actors or a strategy for prioritizing and coordinating non-proliferation/counter-proliferation responses.

This chapter seeks to identify and analyse the major nuclear proliferation challenges posed by non-state actors. It also will propose both priority and longer-term measures to meet these proliferation dangers.

The nature of the threat

The issue of non-state actors and nuclear proliferation is typically framed as one or more threats involving terrorist acquisition and/or use of nuclear weapons. These forms of high-consequence nuclear terrorism include the theft or purchase of fissile material leading to the fabrication and detonation of a crude nuclear weapon – an improvised nuclear device (IND); and the theft and detonation of
an intact nuclear weapon. Although they have different probabilities of occurrence and likely consequences, both these proliferation challenges involve the ultimate use or attempted use of a nuclear explosive by a non-state 'end-user'. Much of the analysis below will focus on the nature of these threats and how to reduce the likelihood of their occurrence.

In addition to the dangers of non-state actors as end-users, it is also important to recognize the proliferation risks posed by non-state actors as suppliers of nuclear material, technology, know-how, weapons designs and, conceivably, the weapons themselves. The extensive nuclear supplier network masterminded by A.Q. Khan is illustrative of this second kind of proliferation challenge, in which non-state actors facilitate and/or accelerate the acquisition of a nuclear weapon by a national government. An analytically distinct but potentially related variant of this threat that has received very little scrutiny is the operation of non-state actors as middlemen, connecting nuclear suppliers – both state and non-state entities – with end-users, which may be either state or non-state actors. Unlike the threat of non-state actors as end-users, which remains a hypothetical one, there have been numerous instances of non-state actors serving as nuclear suppliers and middlemen.

Non-state actors as nuclear suppliers

During the first two decades after the entry into force of the Treaty on the Non-proliferation of Nuclear Weapons (NPT), the principal nuclear suppliers were members of the NPT – France being the main exception. These suppliers also subscribed to such formal and informal codes of conduct for international nuclear exports as the Zangger Committee, the London Club and the Nuclear Suppliers Group. These traditional exporters included both the original nuclear-weapons states and countries without nuclear weapons such as Belgium, Canada, Germany, Italy, the Netherlands, Norway, Sweden and Switzerland. Although analysts were aware of another body of potential second-tier suppliers – among them Argentina, Brazil, India, Japan, Pakistan, South Africa and South Korea – conventional wisdom, until recently, was that these states lacked the combination of technical and financial capabilities and economic and political incentives to have much impact on the international market place (see, for example, Potter 1990).

It is now apparent that these assumptions were very much off the mark, as Pakistan figures prominently in the nuclear histories of North Korea, Iran and Libya. These countries either do not belong to the NPT or have acted without regard to some of its central obligations. More ominously, at least three of them also appear to constitute a network – or 'ring' – in which they have routinely interacted with one another to circumvent both nuclear and missile export controls (Chyba and Braum 2004).

Less obvious but potentially even more significant than the emergence of a new nuclear supplier network of pariah states is the development of a nuclear chain or pathway in which suppliers, brokers and end-users all may be acting
without state sanction. In other words, criminals and/or terrorists have become nuclear suppliers and would-be recipients.

In fact, commercial firms have long circumvented national export controls or relied upon their absence to supply states with a variety of sensitive fuel-cycle technologies and know-how. In 1991, for example, the defeat of Iraq in the first Gulf War quickly led to the discovery that most of the major components for Iraq’s gas centrifuge programme to enrich uranium had been supplied by firms from countries such as the United States, Germany, Switzerland, France and the United Kingdom – but without the knowledge or export approval of their governments. Revelations of the role played by German firms were important in the major overhaul and tightening of Germany’s export controls in the 1990s (Müller et al. 1994; and Müller 1993).

Only very recently has evidence emerged that individuals and organizations have operated independently of their governments as purveyors of direct nuclear-weapons assistance. Although the degree of Pakistani governmental complicity in the nuclear supply activities of A.Q. Khan remains unclear, much circumstantial evidence suggests that the man often considered to be the father of the Pakistani nuclear-weapons programme conducted at least some of his nuclear export activity on a freelance basis. A detailed analysis of the nuclear supplier network led by A.Q. Khan is beyond the scope of this chapter. It is important, however, to take note of the origins, infrastructure and scope of the network in order to assess whether it was a unique phenomenon dependent upon a single individual or the harbinger of a new, generic challenge to the non-proliferation regime.

A great deal remains unknown about Dr Abdul Qadeer Khan’s odyssey from German- and Belgian-educated metallurgist to URENCO employee to Pakistani nuclear czar to ringleader of an illicit and far-flung nuclear supplier network. What is evident is that much of Dr Khan’s career was shaped by Pakistan’s novel approach to acquiring nuclear weapons. As Kampani (2004) points out, Khan, with the support of the Pakistani government, began to procure nuclear materials and equipment making use of centrifuge design blueprints and lists of URENCO’s key suppliers that he had taken from the uranium enrichment facility in the Netherlands where he previously had been employed. ‘In the process, he perfected a clandestine model of trade in forbidden technologies outside formal government controls’. Initially pursued in the service of Pakistan’s nuclear-weapons programme, by the late 1980s Khan’s efforts were redirected to provide nuclear goods and services to other aspiring proliferants. Iran was one of his earliest clients, followed by North Korea and Libya. According to Kampani, Khan’s innovation was to offer a one-stop shop for customers who previously had to search a diffuse market place for nuclear-weapons technologies, design, engineering and trouble-shooting services.

Most available information indicates that Dr Khan was the entrepreneur behind the emergence of what IAEA Director General Mohamed ElBaradei has called a nuclear-weapons Wal-Mart (Clary 2004). Nevertheless, one should take care not to equate the international network with one individual, or to assume
that his retirement will put illicit, non-state nuclear suppliers out of business. Albright and Hinderstein (2004: 1), for example, emphasize that the ‘Khan’ network was relatively non-hierarchical, and involved an international leadership based in Europe, Dubai, Turkey, South Africa and Malaysia (see also Broad and Sanger 2004a). They also observe a ‘familial aspect to the network’ in which members who were involved in the 1970s or 1980s were joined in the enterprise by offspring in the 1990s.

President Bush boasted in 2004 that the Khan network had been shut down. Many experts, however, remain sceptical that the entire network has been dismantled or that the network’s list of customers is limited to Iran, North Korea and Libya. As one IAEA official put it: ‘It may be more like al-Qaeda . . . where you cut off the leadership but new elements emerge’ (quoted by Broad and Sanger 2004a: A-12). Given the huge profits generated by the Khan network, it would be surprising if remnants of that organization or other enterprising criminals with access to sensitive nuclear or dual-use material and/or technology did not seek to emulate Dr Khan and his associates. Although few, if any, are apt to have access to the variety, range and quality of nuclear goods and services offered by Dr Khan – what some have referred to as his ‘nuclear starter kit’ – he never had a corner on all aspects of the illicit nuclear market (ibid.).

There are also grounds for concern about missing and unaccounted-for items known to have been ordered by Libya but not delivered (or recovered), as well as the possibility that the same nuclear-weapons design sold to Libya may still be in stock for other customers. Moreover, although there is no evidence that the Khan network sold nuclear commodities or know-how to non-state actors, the possibility cannot be ruled out.

Without considerable luck and far more cooperation among the United States, the IAEA and Pakistan than has yet been the case, answers to the most intriguing questions about ‘who got what when’ are likely to remain incomplete. Regrettably, the man best able to provide those answers has shown no readiness to do so. The Pakistan government provided few incentives for him to detail his nuclear trafficking activities, the United States has reportedly shared little meaningful information with the IAEA, and Washington also has been very cautious not to press President Musharraf for direct access to Dr Khan following his arrest and subsequent pardon. In addition, US investigators appear stymied in gaining access to Buhari Sayed Abu Tahir – Khan’s principal lieutenant, who was jailed in Malaysia (Broad and Sanger 2004a: A-12).

Non-state actors as middlemen

Fortunately for non-proliferation, a large gulf usually has separated most individuals with ready access to nuclear material, technology and know-how from those pariah states or terrorist organizations which covet nuclear weapons. In the former Soviet Union, for example, many of the documented attempts at nuclear trafficking have been foiled when amateur thieves have incautiously sought to find customers for their contraband.
In stark contrast to would-be Russian nuclear entrepreneurs, the A.Q. Khan network was distinguished by the direct and ready access of its leadership to both Pakistan’s own civilian and military nuclear programmes and that of prospective nuclear-weapons aspirants. It is unlikely that future non-state actors will rival the Khan network in terms of ease of access to a wide array of sensitive nuclear commodities and practical experience in covert procurement for a dedicated nuclear-weapons programme. Nevertheless, almost certainly both criminal and terrorist organizations will emerge to attempt to connect those in possession of or with access to sensitive nuclear goods and services, and those who covet such commodities.

The precise roles performed by middlemen and the intermediaries’ relationship to the supplier and end-user may vary depending upon their status as amateurs, opportunists, organized criminals or terrorists. Among the services they can perform are finding a potential supplier or end-user, negotiating the purchase/sale of the contraband and transporting the commodity. The middlemen also may be employed by either the supplier or end-user to disguise the ultimate consumer. For example, Iraq utilized a Pakistani middleman based in the United Kingdom to arrange a contract for the supply of over 100 tons of high-grade maraging steel, a controlled commodity. The steel was supplied by an Austrian firm, Boehler Edelstahl, which shipped the material to Dubai, reportedly mislabelling the cargo as ‘tool steel’.

It is to be expected that middlemen already engaged or seeking business in brokering illicit nuclear trade will gravitate toward bases of operations in states with weak or non-existent export control regulations and underdeveloped enforcement mechanisms. Unfortunately, many states today fit that description. Two regions of special concern – given their notoriety for civil turmoil, arms trafficking and porous borders, as well as proximity to states possessing large stocks of inadequately safeguarded fissile material – are the Caucasus and Transdniestra. Both these regions in the former Soviet Union have been the scene of reported trafficking incidents involving nuclear material, and Sukhumi in the break-away republic of Abkhazia in the Caucasus was the site of the only confirmed diversion of highly enriched uranium in the former Soviet Union that was never recovered (Potter and Sokova 2002). They also serve as the criminal crossroads and have been characterized by some experts as ‘black holes’ and ‘epicentres’ for black market commerce in drugs, counterfeit money and documents and arms. Although there is not yet evidence that middlemen engaged in sensitive nuclear weapons-related technology have established a foothold in the Caucasus or Transdniestra, many of the necessary conditions exist there for the operation of such a nuclear trading centre.

Perhaps what is most surprising is that there have not been more confirmed cases of illicit nuclear trafficking in the Caucasus and Transdniestra – or other regions of the former Soviet Union – given the presence of large quantities of fissile material and sensitive technology, inadequate safeguards, underemployed nuclear experts, lax export controls and infrequent prosecution for violations of extant nuclear rules and regulations. According to the latest publicly available
version of the IAEA database on illicit nuclear trafficking, there were sixteen incidents involving Soviet/Russian-origin fissile material between 1993 and 2005.\(^7\)

One should be sceptical about the comprehensiveness of the Agency’s database, due to its reliance upon reporting by national governments. Nevertheless, to the extent this picture of limited nuclear smuggling is accurate, it probably results largely from the lack of significant activity by large organized criminal groups (Zaitseva and Hand 2003; Potter and Sokova 2002). Were such groups to act independently or in collaboration with terrorist organizations to purchase or steal sensitive nuclear material and technology or to recruit nuclear experts – perhaps engaging former or active members of Soviet/Russian special forces on their behalf – they would probably have reasonable odds for success.

**Non-state actors as end-users: motivations**

The conventional wisdom about terrorists – until recently – was that very few would be inclined to carry out an attack using WMD even if they had the capability to do so. This perspective was perhaps best stated by Brian Jenkins of the RAND Corporation, who observed: ‘Terrorists want a lot of people watching, not a lot of people dead’ (Jenkins 1987). Historically, this assessment probably is correct, at least for terrorist organizations with clear political agendas. Such groups generally have viewed mass-casualty attacks as counterproductive, having the potential not only to alienate current and prospective supporters of the organization, but also to jeopardize group cohesion by violating widely shared taboos and to provoke severe government repression.\(^8\)

There is little evidence to suggest that most terrorist groups have abandoned this aversion to WMD terrorism. The growing lethality of conventional terrorist attacks during the past two decades, however, indicates the emergence of a new breed of terrorist ready to inflict mass violence in pursuit of a variety of goals often unrelated to concrete political objectives.\(^9\) Amy Sands identifies at least four general categories of non-state actors that might pursue nuclear terrorism. They are apocalyptic groups, politico-religious organizations, nationalist separatist groups and single-issue terrorists (Ferguson and Potter 2005: 18.)

Apocalyptic groups that perceive the end of the existing world order as near are often driven by an extreme passion to hasten events, and may resort to violence. Such groups, which have long existed, possess a deep conviction of the need to purify the world by eliminating non-believers. This self-righteous conviction is shared by politico-religious terrorists that combine both political and religious motivations. At least one of these hybrid groups, al-Qaeda, is known to advocate catastrophic terrorism against Western targets.

By contrast, nationalist/separatist terrorist groups such as the Irish Republican Army, the Tamil Tigers in Sri Lanka and various rebel factions from Chechnya generally have more narrowly focused political objectives for a specific ethnic group than do apocalyptic or politico-religious terrorists. Typically, they include the pursuit of political independence. Violence often is employed as a
means to this end, but also may be employed to exact revenge. Single-issue terrorists also usually have a highly focused political or social agenda such as anti-abortion or animal liberation. Such groups in the past rarely have expressed interest in mass-casualty attacks, although some include violence-prone extremist factions (Ackerman 2004).

It is beyond the scope of this chapter to probe very deeply into the nuclear terrorism motivations of these various categories of terrorist groups. It would appear, however, that the defining characteristics of these groups would significantly influence their attraction or aversion to specific forms of nuclear terrorism.

Apocalyptic and politico-terrorist groups are most likely to be attracted to the acquisition/manufacture and use of nuclear explosives (intact nuclear weapons or INDs). Demonstration of such a capability might be perceived by groups as conferring upon them a near state-like status and prestige, as well as considerable political and military leverage. As Sands notes, apocalyptic groups may also believe that a nuclear detonation would hasten the end of the world by causing mass terror and destruction, while for a politico-religious group such as al-Qaeda, even the credible threat of a nuclear detonation would have an extraordinary psychological impact on the enemy (Ferguson and Potter 2005: 22; see also Ackerman and Snyder 2002). Were al-Qaeda to acquire either an intact nuclear weapon or manufacture an IND, one would have to anticipate its use, since a nuclear detonation would represent the ultimate blow against the perceived enemy.10

It is much more difficult to envisage the employment of high-consequence nuclear terrorism by either nationalist/separatist or single-issue groups. Both would be hard pressed to reconcile any potential benefits in perceived military prowess with the enormous political costs of a nuclear explosion. However, some nationalist/separatist groups might believe they could benefit from the perception by their adversaries that they possessed an enormous capacity to inflict punishment. Given the potential aims of traditional nationalist/separatist groups, one might assume that to the degree they are drawn to nuclear terrorism, they are likely to prefer lower-consequence varieties.

To the extent that single-issue terrorist groups contemplate nuclear threats, their objectives are also more likely to be mass disruption than destruction, with the aim of influencing policy. An anti-nuclear-power terrorist group, for example, might condone attacks on nuclear facilities as a means of discrediting the nuclear power industry, but is unlikely to contemplate seriously the acquisition and use of either an IND or an intact nuclear weapon.

The aims and obsessions of the terrorist organization’s leadership are apt to impact significantly on the attractiveness of nuclear weapons to the group. Shoko Asahara, the leader of Aum Shinrikyo, for example, was obsessed with nuclear weapons and sought unsuccessfully to obtain them (Ferguson and Potter 2005; also Kaplan 2000). Osama bin Laden also has emphasized the need for al-Qaeda to possess the same weapons as its adversaries – a need he has characterized as a ‘religious duty’ (Yousafzai 2001). Indeed, in May 2003, Osama bin Laden sought and received religious sanction for the use of weapons of mass
destruction against Americans and other infidels in the format of a fatwa (reli-
gious decree). This step was only the latest in a quest for nuclear weapons,
which the former head of the CIA team following bin Laden believes has been
pursued in ‘deadly earnest’ since at least 1996.

Fortunately, even for those terrorist organizations that are not dissuaded from
nuclear terrorism by moral considerations or fears of reprisal, implementation
poses major challenges. These include access to nuclear assets and a variety of
technical hurdles.

**Improvised nuclear devices**

A terrorist group motivated to manufacture and detonate an IND would need to

- Acquire sufficient fissile material to fabricate an IND.
- Fabricate the weapon.
- Transport the intact IND (or its components) to a high-value target.
- Detonate the IND.

In this ‘chain of causation’ the most difficult challenge for a terrorist organi-
zation would most likely be obtaining the fissile material necessary to construct
an IND. Terrorists could attempt to exploit many acquisition routes. In particu-
lar, a state might voluntarily share fissile material with a terrorist group or sell
the material to it; a senior official or governmental employee with authorized
access to such materials might provide it to terrorists, for ideological or merce-
nary motives without the express approval of government leaders; the immediate
custodians of the material might, for money, ideology or under duress, provide
HEU or plutonium to the organization or assist in seizing the material by force
or stealth; or terrorists might obtain the material forcefully without insider help.
Finally, nuclear weapon materials could come into the hands of terrorists during
a period of political turmoil, including one brought on by a coup or revolution.

The problem of protecting fissile material globally has many dimensions, the
most significant of which is the vast quantity of HEU and plutonium situated at
approximately 350 different sites in nearly five dozen countries. It is estimated
that there are more than 3,700 metric tons of fissile material – enough for over
200,000 nuclear weapons. Many of the sites holding this material lack ade-
quate material protection, control and accounting measures; some are outside of
the IAEA’s safeguard system; and many exist in countries without independent
nuclear regulatory bodies or rules, regulations and practices consistent with a
meaningful safeguards culture.

**The special dangers of high-enriched uranium**

In a pre-9/11 world where states constituted the main proliferation challenge, it
made sense to treat Pu and HEU as roughly equivalent dangers. Today,
however, in a world where non-state actors pose greater threats in terms of the
likely use of nuclear weapons, efforts must focus much more on rapidly securing, consolidating, reducing and eliminating the vast stocks of HEU globally. The principal reason for this needed shift in emphasis, which is not yet evident in the policies of either national governments or international organizations, is that it is much easier for terrorists to build an HEU-based nuclear explosive. Many experts, for example, have concluded that a ‘gun-type’ improvised nuclear device is well within the technical reach of some non-state actors with access to HEU.

The most basic type of nuclear weapon and the simplest to design and manufacture is a gun-type device. As its name implies, like a gun, it fires a projectile – in this case, a piece of highly enriched uranium. Moreover, like a gun, the device uses a gun barrel to direct the projectile. To ignite a nuclear explosion, the HEU projectile travels down the barrel to another piece of HEU. Each piece of HEU is sub-critical and by itself could not sustain an explosive chain reaction. Once combined, however, they would form a super-critical mass.

Weapons-grade HEU – uranium enriched to over 90 per cent U-235 – is the most effective material for a gun-type device. However, even HEU enriched to less than weapons grade can lead to an explosive chain reaction. The Hiroshima bomb, for example, used about 60 kg of 80 per cent enriched uranium. Terrorists would probably need at least 40 kg of weapons-grade or near weapons-grade HEU to have reasonable confidence that the IND would work (McPhee 1974: 189–94).

Most physicists and nuclear weapons analysts have concluded that construction of a gun-type device would pose few technological barriers to technically competent terrorists. In its 2002 report, the US National Research Council (2002: 45) warned, ‘Crude HEU weapons could be fabricated without state assistance’. The Council also specified, ‘The primary impediment that prevents countries or technically competent terrorist groups from developing nuclear weapons is the availability of [nuclear material], especially HEU’ (ibid.: 40).

While there appears to be little doubt among the experts that technically competent terrorists could make a gun-type device given sufficient quantities of HEU, the question remains as to just how technically competent they would have to be and how large a team they would need. At one end of the spectrum of analysis, there is the view that a suicidal terrorist could literally drop one piece of HEU metal on top of another piece to form a super-critical mass and initiate an explosive chain reaction. Nobel laureate Luis Alvarez’s oft-cited quote exemplifies this view:

> With modern weapons-grade uranium, the background neutron rate is so low that terrorists, if they have such material, would have a good chance of setting off a high-yield explosion simply by dropping one half of the material on to the other half. Most people seem unaware that if separated HEU is at hand it’s a trivial job to set off a nuclear explosion . . . even a high school kid could make a bomb in short order.

(Alvarez 1988: 125)
However, to be sure of being able to surmount any technical barriers, the group would likely want to recruit team members knowledgeable about conventional explosives (needed to fire one piece of HEU into another), metalworking, draftsmanship and chemical processing (for example, in order to extract HEU metal from other chemical forms, such as oxide or aluminium-based reactor fuel). A well financed terrorist organization like al-Qaeda would probably have little difficulty recruiting personnel with these skills.

There are many potential sources of HEU for would-be nuclear terrorists. It is estimated that in the civilian nuclear sector around the world there are 128 research reactors and associated fuel facilities with 20 kg or more of HEU, many of which lack adequate security (General Accounting Office 2004; Bunn and Wier 2005: 39). Also vulnerable is HEU in the form of fuel for naval reactors. Indeed, several of the confirmed cases involving illicit nuclear trafficking have involved naval fuel.

Assuming that terrorists were able to acquire the necessary fissile material and manufacture an IND, they would need to transport the device (or its components) to the target site. Although an assembled IND would likely be heavy – perhaps weighing up to one ton – trucks and commercial vans could easily haul a device that size. In addition, container ships and commercial aircraft could provide delivery means. Terrorists also might try to assemble and detonate a gun-type device at a fissile material storage site – assuming that this site contained sufficient quantities of readily usable HEU metal, the terrorists were suicidal and the assault team included members versed in the relevant technical skills of gun devices (Wald 2002). In as much as, by definition, terrorists constructing an IND would be familiar with its design, the act of detonating the device would be relatively straightforward and present few technical difficulties.

**Intact nuclear weapons**

In order for terrorists to detonate an intact nuclear weapon at a designated target they would have to:

- Acquire an intact nuclear charge.
- Bypass or defeat any safeguards against unauthorized use incorporated into the intact weapon.
- Detonate the weapon.

By far the most difficult challenge in this pathway would be acquiring the intact weapon itself. Possible routes to acquisition include deliberate transfer by a national government, unauthorized assistance from senior government officials, assistance from the custodian of the state’s nuclear weapons, seizure by force without an insider’s help and acquisition during loss of state control over its nuclear assets due to political unrest, revolution or anarchy.

According to conventional wisdom, intact nuclear weapons are more secure than are their fissile material components. Although this perspective is probably
correct, as is the view that the theft of a nuclear weapon is less likely than most nuclear terrorist scenarios, one should not be complacent about the security of nuclear weapons. Of particular concern are non-strategic or tactical nuclear weapons (TNWs), of which thousands exist, none covered by formal arms control accords. Because of their relatively small size, large number and, in some instances, lack of electronic locks and deployment outside of central storage sites, TNWs would appear to be the nuclear weapon of choice for terrorists.

The overwhelming majority of TNWs reside in Russia, although estimates of the size of the arsenal vary widely. The United States also deploys a small arsenal of less than 500 TNWs – in the form of gravity bombs – in Europe. A major positive step enhancing the security of TNWs was taken following the parallel, unilateral Presidential Nuclear Initiatives of 1991–92. In their respective declarations, the US and Soviet/Russian presidents declared that they would eliminate many types of TNWs, including artillery-fired atomic projectiles, tactical nuclear warheads and atomic demolition munitions, and would place most other classes of TNWs in ‘central storage’. Although Russia proceeded to dismantle several thousand TNWs, it has been unwilling to withdraw unilaterally all of its remaining TNWs from forward bases or even to relocate to central storage in a timely fashion those categories covered by the 1991–92 declarations. Moreover, in recent years, neither the United States nor Russia has displayed any inclination to pursue negotiations for further reductions in TNWs or to reinforce the informal and fragile TNW regime based on parallel, unilateral declarations.

Many experts also are concerned about nuclear-weapons security in South Asia, and particularly in Pakistan. Extremist Islamic groups within Pakistan and the surrounding region, a history of political instability, uncertain loyalties of senior officials in the civilian and military nuclear chain of command, and a nascent nuclear command and control system increase the risk that Pakistan’s nuclear arms could fall into the hands of terrorists. Little definite information is available, however, on the security of Pakistan’s nuclear weapons or those in its nuclear neighbour, India.

Should a terrorist organization obtain an intact nuclear weapon, in most instances it would still need to overcome mechanisms in the weapon designed to prevent its use by unauthorized persons. In addition to electronic locks known as Permissive Action Links (PALs), nuclear weapons also may be safeguarded through ‘safing, arming, fusing and firing’ (SAFF) procedures. For example, the arming sequence for a warhead may require changes in altitude, acceleration or other parameters verified by sensors built into the weapon to ensure that the warhead can be used only according to a specific mission profile. Finally, weapons are likely to be protected from unauthorized use by a combination of complex procedural arrangements (requiring the participation of many individuals), with authenticating codes to authorize each individual to activate the weapon.

All operational US nuclear weapons have PALs. Most authorities believe that
Russian strategic nuclear weapons and modern shorter range systems also incorporate these safeguards, but are less confident that older Russian TNWs are equipped with PALs (Sokov 2002). Operational British and French nuclear weapons (with the possible exception of French SLBM warheads) are also probably protected by PALs. The safeguards on warheads of the other nuclear-armed states cannot be determined reliably from open sources, but are more likely to rely on procedures (e.g. a three-man rule) than PALs to prevent unauthorized use (Ferguson and Potter 2005: 62).

Unless assisted by sympathetic experts, terrorists would find it difficult, though not necessarily impossible, to disable or bypass PALs or other safeguard measures. If stymied, terrorists might attempt to open the weapon casing to obtain fissile material in order to fabricate an IND. However, the act of prising open the bomb casing might result in terrorists blowing themselves up with the conventional high explosives associated with nuclear warheads. Thus, terrorists would probably require the services of insiders to perform this operation safely.

Assuming a terrorist organization could obtain a nuclear weapon and had the ability to overcome any mechanisms built into the device to prevent its unauthorized detonation, it would still need to deliver the weapon to the group’s intended target. This task could be significantly complicated if the loss of the weapon were detected and a massive recovery effort were mounted. If a nuclear weapon were successfully transported to its target site and any PALs disabled, a degree of technical competence would nonetheless be required to determine how to trigger the device and provide the necessary electrical or mechanical input for detonation. Here, again, insider assistance would be of considerable help.

It is also possible terrorists might adopt strategies that minimized transportation, such as detonating the weapon at a nearby, less than optimal target, or even at the place of acquisition. Nuclear detonation by a non-state group virtually anywhere would terrorize citizens in potential target countries around the globe, who would fear the perpetrators had additional weapons at their disposal. The organization could exploit such fears in order to blackmail governments into political concessions – for example, demanding the withdrawal of military forces or political support from states that the terrorists opposed. Indeed, the group might achieve these results without a nuclear detonation, simply by providing proof that it had a nuclear weapon in its possession at a location unknown to its adversaries.

**Good news and bad news**

The good news that emerges from the preceding review of terrorist motivations toward and pathways to a nuclear detonation is that few non-state actors appear to have both the motivation to carry out high-consequence nuclear terrorism and the capability to overcome the formidable obstacles involved in mounting a nuclear attack. Therefore, as will be discussed in the next section, significant opportunities exist for national governments and international organizations to intervene to reduce the probability of terrorist success.
The bad news is that the number of terrorist organizations that combine a desire and technical capability to undertake a nuclear attack probably is larger than zero and could increase further in the future. Also of concern from the standpoint of mobilizing effective international action to combat nuclear terrorism is that much of the world does not appear to share a sense of urgency about the threat of either INDs or tactical nuclear weapons. Indeed, even in the United States and Russia, where there is broad governmental support at the declaratory level for the concept of combating nuclear terrorism, there is surprising equanimity about the security of TNWs, as well as a tendency to exaggerate the difficulty of non-state actors manufacturing an IND. The former perspective is probably due mainly to Russia’s acute sensitivity about its ability to protect the one category of nuclear arms in which it has a significant numerical advantage. US reluctance to press Moscow on the matter may be a consequence of its failure to conceive of TNWs as a serious terrorist threat or the desire to avoid any further constraints on TNWs in light of Washington’s own increased interest in ‘mini-nukes’ (Levi 2004; Ferguson and Zimmerman 2003). The tendency to overstate the difficulty of making an IND probably results from failure to distinguish between the requirements for a military weapon and a terrorist weapon. Unlike a national government, a terrorist organization is likely to place far less emphasis on predictability of yield, miniaturization of the nuclear charge and the reliability and safety of the nuclear device.

Conclusion

Major new initiatives to combat the nuclear proliferation and terrorism threats posed by non-state actors have been launched by national governments and international organizations, and considerable sums of financial and political capital have been committed to new and continuing programmes to enhance nuclear security. Although these and other efforts are worthy of support, it is not obvious that they reflect any clear ordering of priorities, or that they are being implemented with a sense of urgency.

In order to correct this situation it is imperative to pursue a multi-track approach that addresses the different but related risks posed by non-state actors as nuclear suppliers, middlemen and end-users. The core elements of such an approach should be to enhance the security of nuclear weapons and fissile material globally, consolidate nuclear weapons and fissile material stockpiles, reduce their size and move toward their elimination. At least four initiatives should be given priority:

- Pursue an HEU-first strategy.
- Promote the adoption of stringent global nuclear security standards.
- Secure vulnerable Russian TNWs.
- Reduce nuclear risks in South Asia.
Pursue HEU-first strategy

Because of the relative ease of constructing an IND with HEU, national and international efforts to protect fissile material should be revised so as to make securing, consolidating, reducing and eliminating HEU the most urgent task, taking precedence over the dangers posed by plutonium. The overarching principle guiding policy should be to move swiftly toward a world in which fewer countries, facilities and locations retain HEU. More specifically, one should:

- **Give priority to HEU when securing nuclear materials.** The US Department of Energy should establish clear priorities in its extensive Material Protection, Control and Accounting (MPCA) programme in Russia that unambiguously place sites containing HEU at the top of its list. It should aggressively pursue the completion of security upgrades at these locations, with the goal of finishing the implementation of ‘rapid upgrades’ within one year.

- **Accelerate the down-blending of Russian HEU.** Under the US–Russian HEU Purchase Agreement, concluded in 1993 and scheduled to run until 2013, the United States purchases thirty tons of HEU derived from dismantled Russian nuclear weapons every year. This material is down-blended to LEU in Russia and is used in the United States as fuel for civilian power reactors. By the end of June 2006, the United States had received 8,084 tons of LEU down-blended from 276 tons of HEU – more than one-half of the total stipulated in the original deal (USEC 2006). As Matthew Bunn, Anthony Wier and John Holdren (2003: 154) have pointed out, the current thirty tons per year rate at which Russian HEU is down-blended ‘was set by what the market would bear, not by what the national security demands’. An accelerated blend-down initiative is needed, under which an additional thirty tons of Russian HEU per year can be down-blended but kept off the market in monitored storage in order not to upset the market price for LEU (ibid.). Ideally, this initiative would be funded by the expanded G-8 Global Partnership, many of whose members have a need for LEU as nuclear reactor fuel.

- **Eliminate HEU in the civilian nuclear sector.** Since the 1970s, the international community has taken incremental steps to reduce civilian use of HEU. These measures include the US Reduced Enrichment for Research and Test Reactors (RERTR) Program, which seeks to develop new LEU fuel and targets to replace HEU; the May 2004 Global Threat Reduction Initiative (GTRI), whose objectives include the return to Russia for downblending of all Soviet-origin HEU fuel by the end of 2005; and a Kyrgyz–Norwegian initiative at the 2005 NPT Review Conference to minimize the use of and commerce in HEU for civilian purposes, aimed at total elimination of HEU in the civilian nuclear sector as soon as technically feasible (‘Combating the risk . . .’ 2005). These initiatives are admirable and their goals are realistic, as there are relatively few commercial uses for
HEU. Achieving them, however, will require much greater political will on the part of the leadership in the United States and Russia. In addition, the initiatives must be better informed about the domestic political, bureaucratic, economic and social factors that impede support in some countries for efforts to eliminate HEU and possible inducements to overcome these impediments.

**Promote adoption of stringent nuclear security standards**

By far the most cost-effective approach to impeding non-state actor access to nuclear materials and weapons and preventing their subsequent use by terrorists is to secure nuclear weapons and materials at the source. A global effort in this regard is required, as this vital first line of defence is only as good as its weakest link. Regrettably, there are many weak links internationally in the physical protection of weapons-usable fissile material. Moreover, no binding international standards exist for its protection. Hence, it is desirable to undertake the following measures:

- **Implement UN Security Council Resolution 1540.** One of the most important new tools to combat nuclear terrorism by making it more difficult for non-state actors to export, trans-ship or acquire sensitive nuclear material and technology is UN Security Council Resolution 1540. Adopted in April 2004, this legally binding measure on all UN members prohibits states from providing any form of support to non-state actors attempting to acquire or use nuclear, chemical or biological weapons and their means of delivery. It also requires states to adopt and enforce ‘appropriate effective measures’ to account for and secure such items, including fissile material, and to establish and maintain effective national export and trans-shipment controls over these commodities. This UN mandate provides an unusual opportunity for those states most concerned about nuclear security to develop the elements of a global nuclear security standard, to assess the specific needs of individual states in meeting this standard and to render necessary assistance.\(^{19}\)
- **Hold states responsible for illicit transactions.** UN Security Council Resolution 1540 goes a long way in addressing the threats posed by non-state actors. Further international action, however, is required to prevent non-state actors from engaging in illicit trafficking in sensitive nuclear materials, equipment and know-how. Ideally, the Security Council should supplement 1540 with a specific provision that holds all states accountable for any illicit transactions emanating from their territory. Failure to prosecute and punish violators should deprive states of the opportunity to do business in the international marketplace.
- **Foster best practices.** A modest step forward in enhancing the physical protection of nuclear material was taken in July 2005 when delegates from eighty-nine countries approved amendments to the Convention on the Physical Protection of Nuclear Materials. The amended convention, which still
must be ratified by member-states, extends a legally binding obligation to protect nuclear material to domestic use and storage in addition to material in international transport. Unfortunately, however, no specific security standards were adopted as amendments, and only general principles for nuclear security were adopted (‘Countries approve . . .’ 2005).

One creative proposal to rectify the gaps in Security Council Resolution 1540 and the Amended Physical Protection Convention is that the nuclear profession itself should ‘identify the world’s best practices in nuclear materials security and accounting’ and ‘create the institutional infrastructure to put those best practices in place in every nuclear materials facility in the world’.20 A relevant model for defining and disseminating best practices in the nuclear security sphere is the World Association of Nuclear Operators (WANO).

**Secure and reduce tactical nuclear weapons**

Preventing non-state actors from gaining access to intact nuclear weapons is essential in combating nuclear terrorism. Priority should be given to safeguarding and reducing TNWs, the category of nuclear arms most vulnerable to theft. Although it would be desirable to initiate negotiations on a legally binding and verifiable treaty to secure and reduce such arms, this approach does not appear to have much prospect of success, at least in the foreseeable future. Instead, Russia should be encouraged to implement its pledges under the 1991–92 Presidential Nuclear Initiatives, including the removal to central storage of all but one category of TNWs. Ideally, all TNWs should be stored at exceptionally secure facilities far from populated regions. In parallel, the United States should declare its intention to return to US territory the small number of air-launched TNWs currently deployed in Europe. Although these are probably less vulnerable to terrorist seizure than tactical nuclear weapons that are forward deployed in Russia, there no longer is a military justification for their presence in Europe. The US action, while valuable in its own right, might be linked to Russian agreement to move its tactical nuclear arms to more secure locations.

**Reduce nuclear risks in South Asia**

Today the locus of greatest nuclear danger involving non-state actors is probably South Asia. This is a region where Islamic militant terrorist groups are very active and where the risk of their gaining access to nuclear weapons and weapons-usable materials – especially from individuals with uncertain loyalties within the Pakistani nuclear and defence establishment – is highest. Accordingly, it is of urgent importance to enhance Pakistani fissile material protection, control and accounting practices. Regional seminars should be organized to share best practices and to facilitate early adoption of ‘appropriate effective’ physical protection measures consistent with Pakistan’s obligations under UN Security Council Resolution 1540.
The United States, possibly in conjunction with other G-8 Global Partnership members, should consider the possibility of providing nuclear threat reduction assistance to both Pakistan and India, including personnel reliability screening techniques and procedures. Steps also need to be taken to eradicate any remnants of the A.Q. Khan network and to put in place nuclear export control regulations and practices that would greatly impede the recurrence of Khan-like activities. In this respect, enforcement of export control laws, required under UN Security Council Resolution 1540, is apt to have an even greater deterrent value than adoption of the laws themselves. Parallel unilateral declarations by Pakistan and India to cease production of fissile material for military purposes would be an important CBM, although the prospects for such declarations may appear remote at present (Perkovich et al. 2005: 159–69).

**A long-term strategy**

Nuclear dangers posed by non-state actors will not be eliminated as long as countries attach value to and retain nuclear weapons and weaponsusable material. Although it is unrealistic to assume that prevailing national views regarding nuclear weapons will change soon, it nevertheless is important to initiate steps today to change mindsets and forge norms consistent with formal national obligations to nuclear disarmament and non-proliferation. An important but under-utilized tool for this purpose is education.

Although few national governments or international organizations have invested significantly in this sphere, there is growing recognition among states of the need to rectify this situation. This positive development is reflected in the broad support for recommendations of a UN study on disarmament and non-proliferation education and in related initiatives within the NPT review process (Potter 2001; Toki and Potter 2005.) Among specific steps that states should take to utilize education and training to combat complacency and reduce the proliferation risks posed by non-state actors are:

- Develop educational materials that show the urgency of the proliferation threats posed by non-state actors and their potential impact on all states.
- Cooperate with regional and international organizations to provide training courses on non-proliferation export controls for government officials and law enforcement officers.
- Cooperate with regional and international organizations to provide training courses on best practices related to nuclear materials security.
- Collaborate with academic institutes and non-governmental organizations to develop a multilingual information clearing house on all issues associated with best practices regarding nuclear exports and material security.
- Allocate resources for the purpose of ‘training the trainers’ in non-proliferation in order to obtain a significant multiplier effect; collaborate with academic institutes in this regard.
- Adopt national non-proliferation education legislation to support graduate
training in the field – the best guarantee that states and international organizations will have an adequate pool of knowledgeable nuclear proliferation intelligence analysts.

Perhaps the greatest promise of non-proliferation education in the long term is the potential growth of a global network of non-proliferation experts and practitioners who increasingly share common norms and promote their countries’ adherence to non-proliferation and anti-terrorism treaties and agreements. This desirable and necessary state of affairs is most likely to be realized if many more bright young individuals enter the non-proliferation field and, by the strength of their idealism and energy, prod national governments to abandon old ways of doing things and adjust their non-proliferation strategies and tactics to take account of new realities.

Notes

1 Among the more influential early studies are Jenkins 1975, Leventhal 1986 and Leventhal and Alexander 1987. See also Epstein 1976.
2 Non-state actors also might inflict nuclear violence by other means, for example, the dispersal of radioactive material by conventional explosives and attacks on or sabotage of nuclear facilities, causing the release of radioactivity. For a discussion of these facets of nuclear terrorism, see Ferguson and Potter 2005.
3 For more on this, see Kampani 2004, Albright and Hinderstein 2004, also Langewiesche 2005.
4 Regarding the lack of US–IAEA cooperation, see Broad and Sanger 2004b.
5 For further details on this case, see Institute for Science and International Security 2002.
6 See e.g. Orlov 2002b.
7 The table ‘Incidents involving HEU and Pu confirmed to the ITOB, 1993–2005’ can be found at www/iaea.or.at/Newscenter/News/2006/traffickingstats2005.html. The number of incidents reported in the table actually decreased by two since 2003.
8 For a discussion of this thesis see Tucker 2000: 9–12.
9 The WMD Terrorism Database of the Center for Nonproliferation Studies also indicates an increase in the number of terrorist incidents involving WMD. Significant high-casualty terrorist events include the Pan Am 103 bombing (1988); the Buenos Aires car bomb (1992); the World Trade Center truck bomb (1993); the Oklahoma City bombing (1995); the Sri Lanka truck bomb (1996); the Saudi Arabia truck bomb (1996); US embassy in Kenya truck bomb (1998); bombs in a Moscow apartment block (1999); the World Trade Center, Pentagon and Pennsylvania attacks (2001); the Bali bomb (2002); the Madrid bombings (2004); and the Beslan hostage crisis in Russia (2004). For more details, see Ferguson and Potter 2005: 15.
10 For a discussion of al-Qaeda’s quest for nuclear weapons see Bunn and Wier 2005: 9–12.
13 The key steps terrorists would have to take on the pathway to a nuclear attack are

14 This figure includes approximately 1,800 tons of plutonium and 1,900 tons of HEU. Of this total, about half consists of HEU and plutonium in civil stocks. See Albright 2005: 2.

15 The other basic weapons design is an implosion device, which squeezes a sphere of fissile material from a relatively low-density subcritical state to a high-density supercritical state. An implosion-type device requires greater technical sophistication.

16 A technology sophisticated terrorist group might succeed with less HEU if it could construct a ‘reflector’ to enhance the chain reaction.


18 See, for example, Sokov 2002; Potter et al. 2000: 58–60.

19 Bunn and Wier 2005: 109 make a similar recommendation.

20 Curtis 2005: 5. An alternative approach by developing a new global security standard is proposed by George Perkovich and colleagues at the Carnegie Endowment is to establish a high-level ‘Contact Group to Prevent Nuclear Terrorism’. See Perkovich et al. 2005: 40.

21 For a discussion of measures to secure nuclear assets in South Asia, see Perkovich et al. 2005: 159–69.
Part III

Building restraint, reducing risks
12 The fizzling fervency of the Comprehensive Test Ban Treaty

Annette Schaper

In May 1961, US President Dwight D. Eisenhower stated that failure to achieve a nuclear test ban ‘would have to be classed as the greatest disappointment of any administration – of any decade – of any time and of any party’. The Comprehensive Test Ban Treaty is one of the most famous of all nuclear disarmament treaties. And it has the longest history, longer than the NPT. The idea originated in the mid-1950s, when concern about the fallout from nuclear tests was rising. Still, however, such a treaty has not entered into force.

It took decades, until 1996, until a treaty text could be successfully negotiated and soon after signed by a large number of states, demonstrating widespread support. No one could, however, have anticipated the developments that followed. One of the most pro-active supporters of the CTBT – the United States – reversed its stance completely. Not only did the United States fail to ratify it in 1999, the Bush Jr administration openly opposed the treaty.

This situation is especially deplorable because the United States had been the major driving force in achieving the CTBT. It had invested considerable effort into motivating other states, and into developing and implementing verification technologies. Indeed, the United States’ former pro-active CTBT stance is the major explanation for the progress achieved in the mid-1990s. The situation deprives several other key abstaining states of an important incentive to move forward.

Moratoria on testing are prevalent, and the taboo against nuclear tests has already existed for some thirteen years. But the moratoria are not legally binding. They may be abandoned any time. And they seem to be endangered. The United States voted against a Japanese proposal for a UN resolution which supported an extension of the test moratorium and early commencement of the CTBT (Scheinman 2002). In its Nuclear Posture Review of 2002, the US administration noted that it ‘may not be possible for the indefinite future’ to maintain the moratorium, although for the present, it still supported it (see US Department of Defense 2002). Ending the moratorium would end the taboo of nuclear testing and severely damage the nuclear non-proliferation regime as a whole. Concerns are also fuelled by plans for developing a new kind of nuclear weapon, the ‘bunker busters’.

The CTBT would effectively prevent a qualitative nuclear arms race, and remains an essential tool for halting the spread of nuclear weapons. This chapter
deals with the CTBT today, in a situation when the prospects of its entry into force are dim. But by focusing on the negotiation history, we may better understand the contents of the treaty and also draw lessons for future arms control negotiations (Ramaker et al. 2003; Schaper 1996a).

**Historical overview**

As early as in 1954, Indian Prime Minister Jawaharlal Nehru proposed a comprehensive test ban treaty. Motives in favour of a test ban included the desire to keep the arms race under control, to prevent proliferation – seen as a serious threat to security – and to curb the environmental consequences of radioactive fallout in the atmosphere.

However, there has always been opposition to limitations on testing. Some scientists claimed that there could be means to circumvent test restrictions, that the safety and reliability of nuclear weapons could not be guaranteed without testing, that further testing would allow important scientific breakthroughs that would reduce environmental dangers, and that verification could not assure that there was no secret testing. Additional opposition to a test ban treaty came from politicians and military commanders. They were concerned that ending their own underground tests would give an advantage to the other side’s nuclear programme.

Anyhow, the desire to end nuclear testing has never disappeared from the international agenda. The 1970 Treaty on the Non-proliferation of Nuclear Weapons (NPT) affirmed the linkage between banning nuclear tests and preventing the spread of nuclear weapons. Successive NPT Review Conferences have further emphasized the importance of a CTBT to the non-proliferation regime. In connection with the indefinite extension of the NPT, the CTBT was explicitly named as a means for nuclear disarmament (Principles and Objectives 1995).

Several international treaties dealing with nuclear explosions have entered into force. The Partial Test Ban Treaty (PTBT), signed in 1963, prohibits nuclear weapon tests in the atmosphere, in outer space and under water, and the bilateral US–USSR/Russia Threshold Test Ban Treaty (TTBT), signed in 1974, prohibits underground nuclear weapon tests with a yield above 150kt. But the loopholes are still too large. For instance, underground nuclear tests below the 150kt threshold serve perfectly the needs of those developing new nuclear weapons. Hence those treaties neither curb the nuclear arms race nor prevent proliferation. Another bilateral treaty, the US–USSR/Russia Peaceful Nuclear Explosions Treaty, signed in 1976, has no benefit for arms control.

In July 1992, the United States unilaterally declared a testing moratorium, adding that it would not conduct nuclear tests to develop new nuclear-weapon designs for force modernization purposes. This was implemented by national legislation in 1993. The US decision was soon followed by Russian and French moratoria. Since then, a strong taboo against nuclear testing has grown, reinforced by the CTBT negotiations that had started in early 1994. Global reaction to the resumption of the French testing in the summer of 1995 clearly showed
how strong international pressure had become, as the protests against France’s six tests exceeded everything seen in the more than 2,000 explosions conducted over the years. Even China suddenly became a target of worldwide criticism, although – unlike France – it had never announced a moratorium.

After two and a half years of negotiations in the Conference of Disarmament (CD), the United Nations General Assembly (UNGA) adopted a treaty text, with an overwhelming majority. This document, consisting of eighty-eight pages of text, a protocol and appendices, was opened for signature on 24 September 1996. As of 13 September 2006, the CTBT had been signed by 176 countries and ratified by 135. But the treaty contains an entry into force (EIF) clause that requires ratification by forty-four specified states, including the United States. So far, it has been signed by all the specified states except India, Pakistan and North Korea, and ratified by thirty-three of the required forty-four, including Britain, France and Russia. Since 2001, a conference has been held every two years to examine how to speed up the ratification process in compliance with international law. But this conference has no power to decide on entry into force. When it was negotiated, it was even nicknamed ‘the handwringing conference’.

No one could have anticipated how apt that nickname would become, since the United States, the major superpower, had been one of the most pro-active supporters of the CTBT. In September 1999, the first special conference of the member-states on accelerating ratification took place – but, as noted, with no legal means to force entry into force. Shortly after, on 13 October, the US Senate voted on ratification. Owing to internal political disputes, voting was repeatedly postponed (Kimball 1999; Kelle 2000: 259). Contrary to the hopes of many observers, the Senate refused to give its consent, by a majority of fifty-two to forty-eight. (A total of sixty-seven votes was what was required.) The Senate had only thirteen days of consultation time.

To understand this result, we need to look more closely at the events of the preceding months. The Chairman of the Senate Committee on Foreign Relations, Jesse Helms, a conservative Republican and bitter opponent of the CTBT, had a crucial influence in the result. When, on 23 September, Clinton submitted the treaty to the Senate for consultation and ratification, Helms also demanded the submission of two other treaties – the Protocol to the ABM Treaty and the Protocol to the Kyoto Climate Agreement, neither of which had anything to do with the CTBT. Otherwise, the committee would not concern itself with the CTBT. The supporters of the CTBT in the Senate, who held the majority, had no legal means of influencing this decision. Thus, the Senate had to vote for the whole package, which a majority of members opposed, instead of voting only for the CTBT, which in principle enjoyed majority support. By putting a whole package up for vote instead of a single item, one senator was able to block CTBT ratification against the will of the majority.

At the end of September 1999, Helms and the conservative Trent Lott, the Senate majority leader, abruptly changed course and, on 7 October, put the treaty up for voting without delay. By then the time for the necessary hearings and debate had grown very short indeed. Negotiations to delay the voting date
failed – Lott was not willing to offer a later date. Procedural rules gave the leader of the majority and the committee opportunities to manipulate and undermine the will of the Senate majority.

Both sides now began intense lobbying of the twenty to twenty-five senators who were still undecided. Only then did the White House make serious attempts to explain the importance and advantages of a CTBT, also seeking the help of various NGOs. Following petitions from hundreds of organizations, experts and former military personnel and a wealth of newspaper editorials, the CTBT soon achieved a great deal of publicity (Kimball 1999). But this could not make up for the lost time, and many senators allowed themselves to be convinced by CTBT opponents that further nuclear tests were necessary in order to maintain the country’s deterrence capacity – an argument that could be refuted by experts but not forced upon the decision-makers. When it became clear that the CTBT would not win a majority, a few senators even tried to push back the vote indefinitely – but to no avail.

The failure was not attributable only to the manoeuvres of a few Republican senators in leading positions and the power of these positions. The Clinton administration also neglected to organize a timely campaign that would have led to a broad discussion, with more information and clarification on the background and motivations for a CTBT. Clinton could have set up an office solely responsible for CTBT ratification. But the President was too distracted by internal politics, personal scandals and the war in Kosovo.

After that, Washington became an opponent of the CTBT. Since 2001, the United States has voted ‘no’ on UN resolutions supporting its entry into force and has boycotted the conferences of states parties to promote such entry into force. The treaty has lost its major driving force, and also other states are still abstaining. It is unclear if the CTBT will ever enter into force.

The CTBT as a means for nuclear non-proliferation and disarmament

Without testing, beginner states would not be able to develop sophisticated warheads, beyond crude nuclear explosives unlikely to be carried by missiles. The first phase in developing nuclear weapons – ‘first generation’ nuclear weapons which apply the effects of nuclear fission – can be accomplished without testing. Other experiments and computer simulations which the CTBT does not prohibit would suffice. Thus in countries suspected of nuclear proliferation, such as Iran or North Korea, development would be possible even under a test ban, provided that safeguards or export controls were not in effect. However, demonstrating a new nuclear capability would not be permitted, so the military planners would not have enough certainty that their arsenal would be effective in combat. Similarly, the possibility of making a political statement by means of a nuclear explosion would not be available to CTBT members. So in relation to the development of first-generation nuclear weapons, restrictions of a political rather than a technical nature would apply.
Technical restrictions would have more effects at the next stage of development: the hydrogen bomb, which employs the effects of nuclear fusion in addition to nuclear fission. In a hydrogen bomb, a nuclear fission warhead serves as a trigger for a further, even greater release of energy. But this can work only under conditions of high technical precision. A crucial prerequisite for this technology is the ability to produce a precise predetermined yield of the nuclear fission trigger – and this requires not merely approximate knowledge of the technology of simple nuclear fission warheads but in-depth familiarity with the details involved. Substantial testing is mandatory, to enable the many parameters and variations of the trigger mechanism to be accurately measured – and this is information which cannot be derived by other methods.

A CTBT would thus effectively impair any further development in threshold states like India and Pakistan, whose next technical goals are to develop a hydrogen bomb and to further integrate their tested nuclear devices into more effective military weapon systems. Although the tests conducted by these countries in 1998 have probably yielded useful information, there is doubt as to whether the data are sufficient.

The symbolic significance emanating from membership in an international arms control treaty has primarily a political effect, and not so much of a technical one. By signing, India and Pakistan would document to the world the end of any further technical development along these lines. The possibility of using nuclear tests for political purposes would be denied for ever and the aim of arms control, nuclear non-proliferation, would be recognized in the form of a treaty, for the first time. However, the prospects of their joining the CTBT remain dim as long as the United States has not ratified. The non-testing norm established in the early 1990s was too weak to prevent them from testing in 1998.

States already in possession of advanced nuclear weapons might wish to develop, miniaturize and adapt their weapons to modern delivery vehicles and to develop warheads with new abilities or based on rebalanced physical effects. Without testing, their technical abilities would be substantially limited. For novel and exotic systems, basic research is necessary – for instance, to measure the physical reactions of different materials under the extreme conditions of a nuclear explosion. Some aspects of basic research are also possible without tests, but the development of new systems would require substantial testing. Exotic ideas such as third-generation weapons, discussed during the 1980s, would remain in the realm of science fiction. The world could be assured that it will not be surprised by new, unusual and destabilizing weapons.

The political disarmament effect of a test ban would even be stronger than the technical consequences. There have been repeated calls for an end to all nuclear testing and its consolidation with international law; indeed, this has become an important symbol for ending the qualitative arms race. As the CTBT is the most famed disarmament symbol, its entry into force would give a boost to other nuclear disarmament initiatives and would strengthen the non-proliferation regime.
A non-proliferation or a disarmament measure?

The twofold aims of the CTBT – non-proliferation and disarmament – seem inherently intertwined, as in the NPT, in a Fissile Material Cut-off Treaty (FMCT), and in the non-proliferation regime as a whole (Müller 2005b). But during CTBT negotiations, differing priorities as to these two objectives caused major disagreements. The conflict escalated towards the end of the negotiations and is reflected especially in proposals for the preamble and in the entry into force provision.

For some delegations, notably the NWS, interest in the CTBT focused on drawing three states outside the NPT – India, Israel and Pakistan – into the treaty, in order to prevent them from developing more advanced nuclear weapons. This is clearly a ‘non-proliferation interest’. Others had mainly a ‘disarmament interest’ – preventing the NWS from developing sophisticated and new nuclear weapons through further testing. While most delegations believed that both interests were mutually reinforcing, this conflict was embodied by India on the one side and the P-5 (the United Kingdom, China and Russia in particular) on the other side.

The differing views on CTBT objectives become apparent if we compare the text proposed by the disarmament proponents and the current version of the draft treaty. In January 1996, India, one of the most outspoken disarmament advocates during the negotiations, proposed a text which reads as follows: ‘Stressing the fact that the main aim of the treaty is the end of qualitative improvements in and developments of nuclear weapons systems …’. This wording reflects the interest of all those for whom the disarmament element is important. Accordingly, it was supported above all by the non-aligned states.

In fact, this wording also precisely describes the objective of a CTBT according to what had been the traditional view for several decades. By contrast, the final text makes no reference to an ‘end’ to qualitative improvements – only of a ‘constraint’. Neither a ‘main aim’ nor an overall objective is mentioned. The text now reads as if a test ban and a ‘constraint’ are ‘effective means towards nuclear disarmament and non-proliferation’ – in other words, disarmament is a secondary effect, not an objective. This clearly reflects the interest of the nuclear powers in de-emphasizing the disarmament element as far as possible.

The position taken by India was in a way hypocritical, viewed in terms of its tests in 1998. During the negotiations, it had always pleaded the cause of disarmament and tried to lead the non-aligned states and bring them over to its side. However, India made more extreme demands than all other states, especially by insisting on a definite timeframe for nuclear disarmament, a demand clearly beyond what the NWS were willing to allow. The NWS in turn made the mistake of not granting a single concession to India, not even in moderate demands such as the wording of the preamble. Consequently, India issued a declaration at the end of the negotiations, stating that it was not in a position to sign or even ratify a treaty which had been entirely dictated to it and which reflected none of its demands.
Some states, especially upholders of the non-proliferation interest, would have liked a provision making it possible to put the treaty in force even without the ratification of all the listed countries. Several variations of possible EIF clauses were circulated, but the NWS insisted on the strict clause. They believed that this clause would exert such pressure on hold-out countries that they would give in, sooner or later. However, this has also meant that each of the forty-four countries now has the leverage to prevent the treaty from entering into force.

Underlying this failure was the erroneous perception that nuclear disarmament and nuclear non-proliferation are competing objectives, instead of being mutually reinforcing. This argument has been cited repeatedly by proponents of disarmament and proponents of non-proliferation alike. They believe in the illusion that they can promote their own goal without granting sufficient concessions to the others. The same error caused the catastrophic failure of the NPT Review Conference in spring 2005 (Müller 2005b).

The scope: the core of the agreement

The ‘zero option’: no fissile energy release

The treaty scope defines the line between permissible and forbidden activities. A wide range of technical activities can be relevant for the development of nuclear weapons. During the CTBT negotiations, suggestions as to what should be permitted and what disallowed therefore involved a great many variations.

In the first instance, the NWS had negotiated a testing threshold among themselves, although this is not compatible with the aim of a comprehensive test ban. But all were subject to strong pressure from their nuclear lobbies to preserve as many technical activities as possible. The United States was in favour of the narrowest limitation: it wanted nuclear explosions that released energy of only a few kilogrammes of TNT (also called ‘hydronuclear tests’) to be allowed. By contrast, France insisted on a threshold of several hundred tons of TNT. The proposals of the other three NWS lay in-between these extremes.

As a reaction to the protests against their tests in 1995, the French suddenly changed their minds. On 10 August 1995, President Chirac announced that France would now support a ban on ‘all nuclear explosions’. This was interpreted as a ‘zero option’ which included a ban on hydronuclear tests. One day later, US President Clinton agreed to the ‘zero option’; the United Kingdom followed suit in September, Russia in March 1996. The announcement was immediately welcomed by all the negotiating parties and cemented the understanding that any release of nuclear energy would be prohibited. Whether Chirac really meant a ‘zero option’ remains dubious. In the United States, there was probably a strong lobby in favour of a ‘zero option’ anyway, independent of the French announcement, based on a study by experts (JASON and the MITRE Corporation 1995). In any case, had a higher threshold remained, there would have been more loopholes which could simplify or even stimulate future weapon modernization.

This outcome, however, is not specifically taken up in the CTBT text. There
is merely a reference in Article 1 to the fact that nuclear explosions shall be prohibited, without defining this context more specifically. The absence of a more precise yield definition in the treaty text may have helped ratifications in NWS. But cynics might also suspect these states of wishing to keep open the possibility of small-scale tests.

A possible wording of a definition might start with an existing definition of a ‘nuclear weapon’ which is already internationally accepted, for example from the founding treaty of the Western European Union. Then the definition could be formulated so that every release of nuclear energy by a device thus defined, however small, constitutes a nuclear explosion. Hydronuclear tests would be included in this ban, but other experiments releasing nuclear energy, such as inertial confinement fusion (see below), would not (Schaper 1994).7

**Other technical activities possibly to be banned**

Up to the very end of the negotiations, China insisted that ‘peaceful’ nuclear explosions should still be allowed. This was unacceptable to all the other negotiating parties, because ‘peaceful’ nuclear detonations cannot be distinguished from military ones and are useful also for military research (see Hu Side and Tian Dongfeng 1995: 100). This conflict seemed set to become a critical obstacle, but a face-saving compromise for all parties was found: a Review Conference, to meet every ten years, can decide by consensus that a ‘peaceful’ nuclear explosion may be conducted, upon application from a party to the treaty (Article VIII).

Indonesia and India demanded a ban on all kinds of experiments that might replace former nuclear weapons tests, including those not involving explosions. In this category are also activities necessary for the maintenance of existing arsenals – a demand unacceptable to the NWS. Indonesia wanted to ban computer simulations and inertial confinement fusion (ICF). The latter is a branch of research which can be of use in various military and civilian applications, like developing advanced nuclear-weapon concepts, and measuring special physical parameters useful in computer simulations of nuclear weapons, but also research into producing civilian fusion energy or astrophysics (Schaper 1991: 279).8

But ambivalent research is taking place in many industrialized countries. Non-nuclear states committed to solely civilian use of ICF would never permit their activities to be banned. Therefore those who had put forward these very broad proposals withdrew them in order not to jeopardize further negotiations progress. However, the problem of ambivalence remains a serious one, and research for civilian purposes should be structured as openly as possible, to enable it to be distinguished from related research conducted for military purposes and therefore kept secret.

States that advocated a broad scope for the CTBT argued that such experiments might be useful in the development of new nuclear weapons. Others countered that they serve only the maintenance of existing weapons and would not be sufficient for developing new ones. A more radical line of reasoning, pro-
pounded especially by India, held that the maintenance of existing weapons would perpetuate their use and would run counter to the goal of abolishing all weapons. This reflects India’s insistence on nothing less than a time-bound framework for complete nuclear disarmament. But others claimed that this would be too much to expect from the CTBT. While the CTBT would curb the arms race by preventing the development of new nuclear weapons, it could not be expected to stand as a comprehensive nuclear disarmament treaty.

Experiments replacing former nuclear tests

In fact, the reason why a CTBT had become acceptable to the NWS was the possibility of conducting other experiments sufficient for maintaining nuclear weapons, to replace the nuclear tests previously used for this purpose. In the United States, France, and probably similarly in the other NWS, activities are carried out that are not forbidden by the treaty and that in part could lead to suspicions that research is being undertaken into qualitatively new nuclear weapons. They include secret ICF research as well as computer simulations and maintenance activities (US Department of Energy 1995 and Committee for the Review of the DOE Inertial Confinement Fusion Program 1997).

Supercomputing involves modelling a nuclear explosion for a specific warhead. Nuclear weapon possessors and proliferators develop extensive computer codes for each warhead type. They simulate the physical processes that take place during the explosion and its various stages. Other experiments are ‘hydrodynamic’ implosions, which study the functioning of the conventional explosive part of a nuclear weapon but without generating a nuclear chain reaction, in contrast to hydronuclear experiments, which produce a nuclear yield. Hydrodynamic experiments are hence allowed under a CTBT: hydronuclear experiments are not.

In domestic discussions prior to the negotiations, the White House sought to appease those opposed to a CTBT, not least the weapon laboratories lobby. It made far-reaching concessions which included the further test-site maintenance, for which US$1.5 billion was set aside in October 1995, and the ‘Science Based Stockpile Stewardship’ (SSBS) (US Department of Energy 1999; see also JASON and the MITRE Corporation 1994; for a summary, Garwin 1995). The SSBS is a scientific and engineering effort aimed at maintaining the US nuclear deterrent in today’s era of no underground testing. The programme has three essential parts: monitoring of the nuclear weapons in the remaining stockpile; repairing and re-manufacturing of components to remedy any degradation observed in surveillance; and basic research to identify what happens in the ageing process and to ensure that any refurbishments are adequate and appropriate. It replaces previous nuclear tests used for this purpose. Major parts of the programme include an ICF experimental site, the ‘National Ignition Facility’, the costs of which alone ran to over US$2 billion, hydrodynamic experiments, further simulation experiments and tests of components. The SSBS was set up in 1994 and has since then been funded by several billion dollars a year.
Less is known of the activities of other NWS, as they are less transparent. Nevertheless, it is recognized that nuclear-test replacement experiments are being conducted elsewhere. A prominent example is a large French ICF plant, the Laser Megajoule (LMJ) at Bordeaux, of a design similar to the US national ignition facility at Livermore and other French test simulations (Galy-Dejean 1993). The two countries collaborate on this research. There are ICF plants and sub-critical experiments in other NWS as well.\(^{10}\)

Critics have queried whether such enormous expense does not undermine the spirit of the CTBT – whether it does not involve the option of developing new nuclear weapons in the future. Similar suspicions have been raised by delegations during the negotiations, especially by advocates of a broad scope for the CTBT. The NWS claim that they merely want to maintain their existing arsenals: as long as they possess nuclear weapons, they need to ensure their reliability, their safety or functioning in case of adaptation to modernized electronic parts. Experiments like those carried out under the SSBS serve maintenance purposes only – not the development of new nuclear weapons. The intention of the CTBT is to end a qualitative arms race, and this is not to be undermined, according to the NWS. But states like Indonesia or India, as well as some independent observers, have quoted US publications on the SSBS and its enormous funding as a basis for their suspicions.\(^{11}\)

**Sub-critical tests**

After the negotiations had been completed, further suspicions arose because of the ‘sub-critical tests’ conducted in the United States and in Russia. These are military experiments, but of limited use for developing new nuclear weapons. Such experiments were postponed from 1996 to 1997 as a precautionary measure in order not to endanger the CTBT. Sub-critical tests and hydronuclear tests are not the same. The latter are self-sustained nuclear chain reactions produced by the use of modified warheads; in the former, the experimental structure is very different, making their value for nuclear weapons dubious (Drell *et al.* 1997; Conrad 2000). A sub-critical experiment does not trigger any self-sustained chain reaction, and the total nuclear energy release is marginal. Its major purpose is to study the behaviour of plutonium when exposed to shock waves caused by conventional explosions. It would not allow any extrapolation for research on boosting effects, so the potential for modernization is probably close to zero. Hydronuclear tests would be prohibited but sub-critical tests would not, in line with the intention of the treaty.

But because these experiments were conducted underground, Washington invested billions for test-site maintenance and initially failed to clarify the nature of the experiments, which also led to massive mistrust and protest worldwide.\(^{12}\) The mood in international negotiation committees like the CD had turned sour long before ratifications failed. Even the assurance not to develop any new warheads was increasingly doubted internationally, since the US government was putting considerable effort into a new nuclear earth-penetrating warhead, a modification of the B61 bomb (B61-11) (Mello 1997).
In 2001, suspicions arose in Washington that Russian sub-critical tests have in fact been camouflaged hydronuclear tests, an assertion vehemently denied by the Russian government (see ‘Divided US Assessment’ 2001).

Why do the United States, Russia and other NWS carry out sub-critical tests even though such tests are of only limited use for nuclear weapons maintenance or research? The reason can be found in the influence of weapons research establishments, for whom the existence and purpose of an entire industry is at stake. Controversial activities like sub-critical testing should be seen as a concession to frustrated physicists rather than as an attempt to contravene CTBT objectives. In the United States, it is claimed that such testing is an important element in stockpile stewardship. Be that as it may, it would be wise for the nuclear states to announce at a high diplomatic level that they are not planning to develop any new nuclear weapons – either now or in the future.

It is unfortunate that these tests are planned to be conducted underground for safety reasons. Since the treaty does not provide for any routine transparency measures on former test sites, the world will be dependent on good faith that harmless sub-critical explosions are being conducted – not hydronuclear ones. Not all countries can be expected to show such good faith, however. A suspicion would remain, one that could undermine the non-proliferation regime precisely by reducing the good will of some countries. The easiest solution to the dilemma would be simply to close all former test sites, as has been done by France, and to allow only above-ground experiments. This would make it clear that no forbidden activities are taking place.

During an earlier phase of the negotiations, Germany and Sweden had also supported the prohibition of test preparations, for the sake of avoiding ambiguous situations. This would have exposed certain suspicious activities on test sites at least to public doubt whether they represent a treaty violation. But since this proposal was not supported, this position was abandoned. Instead, the delegations demanded a high degree of transparency.

Verification

The CTBT contains one of the most extensive technical verification regimes ever agreed upon. The technical component is a new creation, the International Monitoring System (IMS), with 321 monitoring stations located all over the globe, as the major means of verification. When the treaty enters into force, this system will be complemented by on-site inspections.

The largest parts of the treaty text concern verification, and considerable negotiation efforts were devoted to verification. Some twenty years earlier, experts concerned with the verification of a test ban had started meeting regularly in Geneva. The meetings had the political purpose of maintaining a dialogue at a time when the CD was deadlocked. This long preparation period was to prove worthwhile: voluminous and well considered proposals were available, making it possible to design a technical system quickly. Nuclear explosions can be conducted in earth, water and air, and these test environments must all be monitored.
The Comprehensive Test Ban Treaty Organization (CTBTO) is to be established in Vienna to implement the treaty. It will organize an annual conference of the member-states and will have a fifty-one-member Executive Council and a technical secretariat in charge of controlling an International Data Centre (IDC). The Executive Council will be empowered to convene further conferences. Its most important function will be to decide how to proceed in cases of suspected or actual treaty non-compliance. There will be permanent as well as rotating membership. Not surprisingly, its composition was subject to tough negotiations.

In the interim, a ‘Preparatory Commission’ has been set up. It consists of a plenary body composed of all the states signatories, and the Provisional Technical Secretariat (PTS). Upon signing the treaty, a state becomes a member of the Commission. Member-states oversee the work of the Preparatory Commission and fund its activities. The Commission’s main task is the establishment of the International Monitoring System and the International Data Centre, and the development of operational manuals, including those for on-site inspections.

In order to verify explosions in the atmosphere, infrasound stations and radionuclide measurement are used. Explosions in the oceans can be verified by hydro-acoustic stations equipped with special microphones. Eleven hydro-acoustic stations is a sufficient number, because sound in certain layers under water carries for thousands of kilometres. Additionally, fifty advanced seismological stations and sixty infrasound stations will report data on-line to the IDC, and 120 supplementary seismological stations will register and store data that can be called up on demand. Furthermore, eighty stations and sixteen analytical laboratories are planned for radionuclide particle measuring; forty of the stations will be equipped to measure radioactive noble gases. The data are to be collected in the IDC, processed and distributed from there to the member-states. In unprocessed form, such data may comprise hundreds of megabytes per day – impossible for individual states to handle without additional expenditure in cash, equipment and experts.

During the negotiations, views differed to what extent the IDC should take on such additional functions as characterizing, analysing and selecting data so as to allow the member-states to evaluate them better, on the basis of a condensed and prepared report. The more such services the IDC could offer, the easier it would be for states to form an opinion in uncertain cases and to participate in the decision-making process concerning the consequences. This is especially relevant for states lacking in technical experience. However, the United States maintained that each state should prepare its own analysis, claiming that otherwise the IDC would relieve member-states of their responsibility and decide for them.

Germany on the other hand supported the opposite view: it was absurd to duplicate the efforts for which the IDC was best suited. The result was a compromise: in case of need, the member-states can obtain all services required, although in part they will have to pay for them. The CTBTO (today the PTS) prepares a quite comprehensive bulletin based on thorough analyses. The analyses, however, do not include any statements as to nature of the event(s). Decid-
ing whether an event is suspicious and merits an on-site inspection is up to the states parties.

The International Monitoring System will be impressive. Due to varying geographical conditions in the interior of the earth, its detection capability will differ in different parts of the globe. It is likely that it will reach capabilities significantly below 100 tons TNT in certain areas, especially on the Eurasian continent. A comprehensive test ban would require further measures such as mechanisms to clarify cases of doubt, on-site inspections, requirements for openness and national technical means (NTM). The best satellites are owned by the United States, with resolution up to 10 cm.

In addition to optical imagery, satellite technologies capable of detecting nuclear explosions include X-ray, gamma-ray, neutron and electromagnetic pulse detectors, and thermal and radar imagery. In the past, the United States always managed to forecast Chinese nuclear tests. China, which does not possess technology with the same degree of perfection, had argued in vain for satellites as a further element of the IMS. A Chinese proposal suggested three ways to establish this system: by making an agreement with the appropriate states parties to utilize their current NTM capabilities; by mounting CTBT monitoring equipment on the future launches of states parties; and lastly by procuring a network of satellites dedicated to CTBT monitoring. But this would have involved massive verification costs, so most states rejected the incorporation of satellite verification.

The most important questions remained: how, when and how quickly are on-site inspections to be triggered? Such inspections should act as a deterrent; on the other hand, many countries objected to providing too much own transparency, above all China, Israel, India and Pakistan. Complicated details were negotiated, concerning, for instance, the height and execution of flights over a suspicious area, permitting and forbidding on-site measurements, and the length of the inspection report. Some effects (like local aftershocks and local venting of rapidly decaying radioactive noble gases) last only a few days after a nuclear explosion.

There were also disagreements concerning the decision-making process. Should inspection take place automatically unless explicitly forbidden by the Executive Council? Or could it only take place if explicitly permitted? Or should one accept a mixture? And with what majorities and under what conditions? Agreement was finally reached after much effort, involving three pages of treaty text solely on the decision-making process.

As long as the CTBT is not in force, on-site inspections cannot take place. But the technical monitoring system set up by the Preparatory Commission makes it possible to detect and identify nuclear tests and other events at low thresholds. Clarifying the nature of events at low yields – whether it is an allowed sub-critical test or a banned hydronuclear test – will be possible only once the treaty has entered into force and on-site inspections can be carried out. Additional transparency measures would provide further confidence in the treaty.
States are showing interest in receiving data from the IMS. Thanks to these data, the likelihood that nuclear testing remains undetected is low, even without on-site inspections. This means that the verification has a deterrent effect, as errant states are unlikely to risk being detected. Also the United States has supported the work of the Preparatory Commission since it began operations in 1997, despite its opposition to the treaty and its failure to ratify. But Washington has restricted its financial contribution to maintaining and completing the IMS and IDC, which it sees as a welcome complement to its own NTM. It withholds a fraction of the funding in protest because part of the money received by the Preparatory Commission goes into preparation of on-site inspection-related activities. Commission officials fear that, because of the US decision and the failure of some other signatories to meet their financial commitments, the organization is accumulating a debt that may slow down work in future years (Pomper 2004).

Current debates

The CTBT is not in force but the effects are already evident. The non-testing norm has remained strong, and the trust that no secret nuclear tests are taking place is high, despite rising suspicions that some NWS are modernizing and extending their arsenals, and the fears that nuclear proliferation is on the rise. The treaty is widely perceived as a long-sought step toward nuclear disarmament and consequently an important element of the non-proliferation regime. This in turn means that weakening the CTBT involves the danger of weakening the non-proliferation regime as a whole.

This perception is shared by most of the international community. Many have repeatedly stressed the importance of the treaty, including almost all members of the Western group. In 1995, the international community extended the NPT indefinitely, mainly because the major NWS were committed to concluding the CTBT. They renewed their pledge at the 2000 Review Conference (Johnson and Kimball 2001). On international occasions such as the EIF of the CTBT or Review Conferences of the NPT, calls in favour of the CTBT are repeated. For example, on 23 September 2004, forty-two Foreign Ministers issued a joint statement, calling the CTBT ‘a major instrument in the field of nuclear disarmament and non-proliferation’ and urging its ratification by all states (Joint Ministerial Statement on the CTBT 2004).

Also official EU statements and official NATO publications repeat the commitment to the CTBT. In 2005, a NATO publication stated specifically: ‘All Allies but one have ratified and continue to support the ratification, early entry into force, and full implementation of the Comprehensive Test Ban Treaty (CTBT)’ (‘NATO’s Nuclear Forces’ 2005).

The nuclear-weapon states except the United States support the CTBT and its early entry into force. They all have signed the treaty, but the ratifications of the United States and China are still pending. While China keeps stressing its commitment to the treaty, it is apparently waiting for the United States to ratify first (China 2005b).
As mentioned, after taking office in 2001, the Bush administration changed the American policy on the CTBT and withdrew its support, taking up the arguments of the domestic critics of the treaty (see Bailey 2001; Johnson 2001; Kimball 2005b; Committee on Technical Issues 2002). One argument was the desire to develop a new earth-penetration warhead, which would be possible only with new nuclear tests (Ferguson 2002; for a technical assessment, see Nelson 2002). Washington wanted to keep the option open at least, so the test moratorium was continued, but not officially extended for an indefinite period. However, there is strong domestic opposition to such a new warhead, and funding requests are frequently rejected by Congress.

A second argument was the discussion whether the Stockpile Stewardship was adequate for inspecting the reliability of US nuclear arsenal. Critics claimed that, without further nuclear tests, confidence in its functioning could not be sustained in the long term. But several thorough studies involving insider experts on US nuclear weapons concluded differently: that the Stockpile Stewardship is completely adequate (see US Department of Energy 1995, 1999; Committee for the Review of the DOE Inertial Confinement Fusion Program 1997; also JASON and the MITRE Corporation 1994).

The third subject is verification. Some US government officials quoted Secret Service information, according to which Russia was in the process of preparing hydronuclear tests on Novaya Semlya (‘US Concern’ 2002). Independent observers, however, speculated that this story was cooked up to undermine the credibility of the CTBT. It seems more likely that the Russian activities were a sub-critical test, as Moscow has asserted. But without additional transparency or with the full range of verification measures, on-going activities at US, Russian and Chinese test sites can easily be misinterpreted.

The US discussion is not new and does not contain any arguments which have not been scrutinized in previous studies. Nevertheless, additional studies have been conducted which confirm that the CTBT is effectively verifiable. The latest – a report under the aegis of the former General John Shalikashvili, commissioned by the Clinton administration (US Department of State 2001), and a report by the US National Academy of Science (NAS 2002), concluded that there were some disadvantages to the treaty, but that these were outweighed by the advantages.

At present, there is no US interest, and opposition to the CTBT prevails in the Senate. Conservative Republicans have even been pressing the Bush administration to withdraw the US signature, although the White House has refused to consider such proposals (Pomper 2004). Opposition to the treaty is but one of many symptoms of the current US government’s general loss of interest in international regimes, treaties and organizations as a whole (Müller and Schaper 2004).
Conclusion

The US stance has dampened the enthusiasm of others, including other NWS. China is withholding its ratification, although on suitable occasions officially repeats its commitment to the treaty. In Russia, domestic debates seem to become more heated, as a reaction to the shift in US policy (Sokov 2003). The Russian view is that developments of US nuclear policy might eventually lead to a revision of Moscow’s current nuclear posture. Russia will still observe the testing moratorium, but President Putin, speaking in 2003, sets conditions: ‘Under certain obligatory conditions, one of the most important of which is a similar attitude on the part of other nuclear states toward obligations they had undertaken’ (Jasinski et al. 2002; Sokov 2003).

According to Sokov, Russian officials previously emphasized that Russia had signed the CTBT and hoped that the treaty would soon enter into force. Now the emphasis has shifted to conditions under which Russia might withdraw from the moratorium – at least, there seems to exist a lobby against the CTBT. In 2002, two former Ministers of Atomic Energy, Viktor Mikhailov and Yeveniy Adamov, indicated that Russia might resume nuclear tests in the future. They claimed that, in the long run, the still-permitted technical activities to ensure the safety and reliability of nuclear warheads will not be sufficient (Jasinski et al. 2002). Like the United States, Russia has also been conducting sub-critical experiments. The lack of transparency on both sides has repeatedly led to mutual suspicions about the true nature of activities.

Nevertheless, in international contexts, Russia remains firmly committed to the CTBT. For example, during the NPT Review Conference in 2005, Russia insisted that the Final Declaration mention the CTBT, against the wishes of the United States. France and Britain, on their part, were willing to delete any mention of the CTBT – a clear deviation from the Common EU Position (Müller 2005b).

The United Kingdom is still committed to the CTBT, but its enthusiasm seems weakened (Acronym Institute 2004). In its Strategic Defence Review of 1998, nuclear arms control is called ‘an important objective of foreign and defence policy’, and Britain’s commitment to the CTBT is explicitly emphasized. But all that the Defence White Paper of 2003 notes is that Britain will ‘continue to play a full role in international efforts to strengthen arms control and prevent the proliferation of chemical, biological and nuclear weapons’. Since George W. Bush took office in the United States, the United Kingdom has fallen silent on the subject of the CTBT. Britain also plans to upgrade its technical abilities for maintenance of nuclear warheads, including laser and hydrodynamic facilities.

France has dismantled all its nuclear test sites, thereby rendering its testing moratorium practically irreversible. Its commitment to the CTBT has not been challenged, although France refrained from referring to the CTBT during the NPT Review Conference in 2005. However, at the Conference on Entry into Force of the CTBT, the French delegate called the treaty ‘one of the fundamen-
tal components of strategic stability’ (Colonna 2005). All the same, a general shift in French nuclear policy can be observed, towards concepts of greater diversity of conceivable deterrence scenarios (Tertrais 2004).

Apart from the official NWS, the nuclear weapon possessors India, Pakistan and Israel are also central to EIF of the CTBT. Israel kept a low profile during the CTBT negotiations, and was mainly interested in keeping the intrusiveness of verification as low as possible. It has signed the treaty but not ratified. Persuading India to join the CTBT was perceived as the major obstacle towards the end of the negotiations. Pakistan has always declared that it would join the CTBT as soon as India did so. Many states perceived the states outside the NPT as the main targets. The assumption was that they would not be able to develop hydronuclear bombs without nuclear tests. Indeed, it is widely assumed that both India and Pakistan failed to ignite thermonuclear secondary explosions during their testing in 1998, contrary to their own claims.\(^{19}\) Several more tests would be needed before they could develop a working design.

After their nuclear tests in 1998, both India and Pakistan declared a moratorium. India perceives itself as a nuclear-weapon state. In 1999, some domestic debates took place on whether India should sign the CTBT. One argument was that the sanctions imposed after the tests would be lifted as a result (Deshingkar 1999). But opposition to the treaty has always dominated. While still upholding the moratorium, India has lost interest in the CTBT (see ‘CTBT has no relevance . . .’ 2005). As long as there is no US interest, it is unlikely that India will change its stance. As stated in an Indian–Pakistani statement of 20 June 2004, ‘Each side reaffirmed its unilateral moratorium on conducting further nuclear test explosions’ barring ‘extraordinary events’ (Medalia 2005).

In 2005, Washington surprisingly changed its policy towards India and offered civilian nuclear cooperation (Boese 2005a). This move has been widely criticized for undermining the NPT, as nuclear collaboration was previously reserved for NPT members.

An overwhelming majority of the international community has signed the CTBT, but only a few countries are crucial to its entry into force, notably the United States and India. Future civilian nuclear trade with India could be used as leverage in favour of the CTBT. As India has considerable interest in a nuclear trade agreement, there is an opportunity for setting conditions. Most members of the international community would welcome the idea of India’s CTBT ratification as condition for nuclear cooperation, and there are good prospects for coordinating international policy on this issue. If Washington should pursue a similar policy, success would not seem illusory. India and the United States would ratify, with high likelihood that other hold-outs like Pakistan would follow suit.

The international community should press both India and Pakistan towards ratification of the CTBT. Unfortunately, although outside actions might be able to trigger some revival of interest, the prospects with the current US administration seem low. In contrast, the Bush administration has continued to inflict damage on the treaty. Many delegations are worried that Washington will not
only prevent the CTBT from entering into force but will destroy it altogether. On the other hand, the growing pessimism that the United States cannot be persuaded anyway must not be allowed to turn into a damaging fatalism (Johnson 2003b).

Instead of sinking into fatal fatalism, supporters should adopt a more outspoken international profile in favour of the CTBT – even if this means risking some conflicts with the few states that still pursue a different policy.

Notes

I wish to thank Ola Dahlmann for very useful comments while preparing this chapter.

1 Quoted from Nitze and Drell 1999: 19.
2 On the background of French nuclear testing see Schaper and Müller 1995.
3 For the latest information on the status and implementation of the CTBT see www.ctbto.org/.
4 On the ability of developing nuclear weapons without testing by beginning or more advanced proliferators respectively, see for example Garwin 1996, Schaper 1996b or Mark 1991.
6 As an example, the German understanding that the zero option means no nuclear yield is reflected in Foreign Minister Kinkel’s press declaration of 12 August 1995, commenting on Clinton’s declaration of 11 August. It includes the wording ‘ban of all nuclear explosion, including those of very small yield’, Auswärtiges Amt, Pressereferat, Presseerklärung 366/95, 12 August 1995. The official US government view is: ‘In the negotiations a shared understanding was achieved, including Russia and China, that all nuclear explosions, however small (including hydronuclear tests), are prohibited, and subcritical experiments are not prohibited’ (US Department of State 1999a).
7 The Brussels Treaty signed on 17 March 1948, amended by the Paris Agreements signed on 23 October 1954, Protocol No. III on the Control of Armaments. The definition reads ‘any weapon which contains, or is designed to contain or utilize, nuclear fuel or radioactive isotopes and which, by explosion or other uncontrolled nuclear transformation of the nuclear fuel, or by radioactivity of the nuclear fuel or radioactive isotopes, is capable of mass destruction, mass injury or mass poisoning’. Jozef Goldblat cites additional definitions of nuclear weapons, cf. Chapter 2.
8 ICF is an experiment that creates a miniature fusion plasma caused by high-energy lasers and potentially also by particle beams. Its physical properties can be compared to that of an ignited nuclear bomb secondary.
9 The understanding that also hydronuclear experiments are included in the scope of the treaty is shared by the international community, including the US government, although they would very likely not be detected by the International Monitoring System. This contradicts a description in Ramaker et al. 2003: 57.
10 See the publications of the Acronym Institute for a collection of all press releases on subcritical experiments: www.acronym.org.uk.
11 Indonesia’s broad demands with regard to the scope had been fuelled by NGO publications, see for example Kalinowski 1996.
12 The Japanese, allies of the United States and others also protested: Associated Press 1998. One of the first critical analyses is von Hippel and Jones 1996. There have also been continuous protests by NGOs.
13 For more on this, see the web site of the CTBTO Prepcomm: www.ctbto.org.
For examples of such proposals, see Harjes 1985 and US Congress, Office of Technology Assessment 1988.

Many governments regularly release disarmament and arms control reports in which they endorse their commitment to the CTBT. As an example see the German report (Ministry of Foreign Affairs, Germany 2004/05).

Examples include Sanders 2004; NATO 2000.

China declared its ‘firm support’ of the treaty on the occasion of the NPT Review Conference in May 2005 (China, People’s Republic 2005a). A Russian declaration issued on the same occasion reads: ‘the Russian Federation has made the Treaty’s entry into force one of the priority spheres of its work’ (Russian Federation 2005), a French statement is ‘France is convinced that the CTBT is an indispensable nuclear non-proliferation and disarmament instrument. Additionally, France is striving unrelentingly to promote the entry into force of this treaty’ (Fortelle 2002), and finally, a British statement reads: ‘The UK has both signed and ratified the Comprehensive Nuclear Test Ban Treaty and remains firmly committed to that treaty’ (Broucher 2004).

A statement on this web site reads: ‘China supports the early entry into force of the CTBT and hopes that all countries will sign and ratify it at an early date.’

See e.g. Perkovich 1999 and Tellis 2001 or Karnad 1999.
13 The Fissile Material Cut-off Treaty as a nuclear security policy driver

Annette Schaper and Morten Bremer Mærli

Nuclear arms control has always been a bumpy road. Yet, due to an underlying strain of optimism and hope, coupled with recognition of its strict necessity, the field has moved forward by fits and starts. Despite setbacks, nuclear arms control has shown remarkable resilience, and some notable successes. By the mid-1990s, the international community had negotiated the long-awaited Comprehensive Test Ban Treaty (CTBT); the Non-proliferation Treaty (NPT) was indefinitely extended and new states joined; the United States, Russia and other nuclear-weapon states undertook serious steps in nuclear disarmament; and new nuclear weapon-free zones were negotiated. In the longer term, even deep cuts in nuclear arsenal and extensive nuclear disarmament were considered viable.

A Fissile Material Cut-off Treaty (FMCT) was regarded as the natural next step on the arms control agenda, to be negotiated immediately after the CTBT. Such a treaty would effectively halt future production of fissile material for explosives, thereby capping the number of warheads that could be manufactured. A controversial issue indeed; there was hardly any doubt that the negotiations would be difficult, but the interest was there. Most nations, including the nuclear-weapon states, appeared genuinely positive. It seemed a logical consequence of nuclear reductions, to deal not only with warheads but the fissile materials of which they are made. An FMCT could insert transparency and irreversibility in the disarmament process – limiting both armament and rearmament potentials.

However, the optimism was soon to be replaced by stupefaction. Since the conclusion of CTBT negotiations in 1996, the Conference on Disarmament (CD), the assigned FMCT-negotiating forum, has remained deadlocked. Moreover, in summer 2004, Washington announced that it no longer regarded such a treaty as verifiable. With this, the small remnants of FMCT momentum crumbled and the scant consensus – particularly amongst the NWS – among those claiming to be in favour of such a treaty faded, again.

The question is now whether start of negotiations on this long-stalled treaty is – at best – likely to be further delayed, if not abandoned altogether. Or, whether political de-emphasis of verification may in fact revive the interest in an FMCT as a norm-making institution and an operational tool amongst the treaty’s key parties – most of whom have been well accustomed to years of nuclear auto-
nomy. Target states of the FMCT are the United States, Russia, the United Kingdom, France, China, India, Pakistan, Israel and North Korea, now that it has broken out of the NPT, expelled the IAEA inspectors and become de facto a non-NPT state.

Even in the fairly limited number of target states, an FMCT will affect the nations differently, due to variance in nuclear fuel cycles and national nuclear practices, and differing inventories of fissile material. These deviations come on top of the existing dividing line between the nuclear ‘haves’ and ‘have-nots’. They will deepen political and technical discussions on how to implement the treaty, as well as the issue of cost-sharing.

In 1978, the UN General Assembly (UNGA) adopted the first of its many resolutions calling for verifiable control of fissionable materials. At that time, UN member-states considered that full-scope IAEA safeguards accepted on a non-discriminatory basis would be sufficient (UN General Assembly 1978). To this day, it is generally understood that NNWS with full-scope safeguards in place would be verifiably compliant with an FMCT, as they are already prohibited to produce nuclear materials for nuclear explosives by the Non-proliferation Treaty (NPT).

To increase the attractiveness of an FMCT for hold-out states, this chapter explores possible new roles and functions of the treaty. Disarmament goals and non-proliferation benefits come together in proper fissile material management, possibly creating new room for political manoeuvring. While the treaty’s significance for nuclear threat reduction should be evident to most states, its role as a relevant (political and technical) tool for nuclear arms control needs to be redefined, clarified and specified in a new, responsive, security environment. Such a process may inter alia involve introducing new FMCT elements for stockpile control, while honouring the most inclusive nuclear sovereignty ‘needs’ of the target states.

To bridge the gaps and possibly gain headway in FMCT negotiations, common ground and interests should be explored. A successful FMCT could serve as a ‘policy driver’ towards a nuclear material security regime extending beyond the scope of a production ban.1 Relevant commonalities include:

- General interest in curtailing new and emerging NWS.
- Increased awareness of and sensitivity to nuclear terrorist issues after the events of 9/11.
- An evolving understanding of the security risks associated with excessive stocks of fissile material.
- Renewed interest in strengthening the ‘firewall’ between civilian and military nuclear material production, and multilateral fuel supply solutions.

Much has already been written about the FMCT.2 This chapter starts out by providing some background on the FMCT – its history, various concepts of scope and verification, and the arms control environment in which the treaty is meant to operate. Synergies and overlaps with on-going nuclear security activities are
identified. The case is made for an extended Cut-off Treaty, with verification as an indispensable element. The chapter concludes by explaining how and why a Fissile Material Cut-off Treaty, with a suitable verification scheme in place, could become a strong policy driver for global fissile material control.

**History and state of FMCT affairs**

The goal of an FMCT has been set out in two international decisions, both adopted by consensus: a 1993 UN General Assembly resolution (48/75L) and then a 1995 decision by the Conference on Disarmament to adopt what is known as the ‘Shannon mandate’ (CD/1547) (see UN General Assembly 1993). Both decisions call for the negotiation of ‘A non-discriminatory, multilateral and internationally effectively verifiable treaty banning the production of fissile material for nuclear weapons and other nuclear explosive devices’.

To date, however, the Conference on Disarmament (CD), which is the international body mandated with negotiating such a treaty, has been unable to make any progress on the FMCT issue. Despite the obvious relevance for collective nuclear security, and despite efforts to launch a treaty initially proposed back at the dawn of the Atomic Era, it has been impossible to reach agreement on the negotiation mandate of a multilateral ban on the production of fissile material for nuclear explosives. The nickname ‘Orphan of Arms Control’ seems sadly apt.

As early as 1946, the first annual report of the UN Atomic Energy Commission to the Security Council recommended the establishment of an international agency whose duties would include providing for the disposal of fissile material stocks. The effort, also known as the ‘Baruch Plan’, included a proposal for a cut-off of fissile material for weapons. A cut-off was next proposed by India in 1954, together with a proposal for worldwide nuclear disarmament and a nuclear test ban treaty. This proposal was, however, rejected without any further discussion. Then in 1956, Eisenhower re-proposed a cut-off, this time to be refused by the Soviet Union (Schaper 1997: n. 3). A proposal by Gorbachev in 1989 was turned down by George Bush Sr.

A 1992 US decision to halt the production of fissile material allowed Clinton to call for a multilateral convention banning the production of fissile material for nuclear weapons in 1993. By the end of the same year, the UN General Assembly had adopted the resolution that created a foundation for the Shannon mandate by requesting the IAEA to provide ‘assistance for examination of the verification arrangements for such a treaty, as required’ (see also Shannon Mandate 1995). Today, the Agency remains ready to consider playing an active role in the verification of state compliance with an FMCT, should a treaty be agreed upon.

Following these breakthroughs, the Conference on Disarmament appointed Ambassador Shannon of Canada as ‘Special Coordinator’ to seek the views of members on the most appropriate arrangements for negotiating an FMCT. In June 1994, Shannon announced consensus among CD members to negotiating a treaty at the conference. However, whether to include past production and exist-
ing stockpiles in the scope of the treaty remained a controversial issue. Therefore, in March 1995, the ambassador came up with a compromise formula that focused the mandate on future production, but which allowed the ad hoc committee to address other issues relating to the cut-off.3

However, despite the support given by the 1995 NPT Review and Extension Conference, the Shannon mandate did not lead to actual negotiations in the CD. Nor did the strong FMCT endorsement of the 2000 Review Conference of the NPT create any negotiating impetus. The subsequent RevCon, in 2005, simply collapsed. Apart from a minor intermezzo in August 1998 – when the CD did manage to establish an ad hoc Committee for Cut-off negotiations – very little has happened on the FMCT scene during the past decade. The CD has remained stalemated for years, and no negotiations have taken place.

Reasons for the current stalemating are manifold. Explanations must be sought inter alia in the consensus norm of the CD, linkages to other security issues like the weaponization of space and the US National Missile Defense, and regional security considerations. While in-depth assessments of such issues are beyond the scope of the chapter, the CD negotiating environment will be briefly discussed in the following.

The CD stalemate

It was expected that the CD would form an ad hoc committee on the FMCT soon after the end of the CTBT negotiations. But the CD was unable to proceed in the years after 1996, due to a linkage: a group of non-aligned states, led by India, insisted that there should also be talks on the phased elimination of nuclear weapons within a time-bound framework. The group blocked discussion of any other nuclear issues because its demand was not met. Already during the CTBT negotiations, India had demanded – in vain – complete nuclear disarmament within a time-bound framework as a condition for its adherence. The NWS were unwilling to agree to any negotiation forum on comprehensive nuclear disarmament, which led to the initial stalemate at the CD, where all decisions are taken by consensus. After its nuclear test in 1998, however, India has changed its position: it now perceives itself as a nuclear-weapon state, and opinions voiced by Indian government officials do not differ greatly from those of other NWS.

Yet FMCT negotiations did not start, because the initial linkage was replaced by another one: from 1999, China insisted that an ad hoc committee on the ‘Prevention of an Arms Race in Outer Space’ (PAROS) should be established in parallel to any FMCT endeavours. The background was China’s opposition to the US cancellation of the ABM Treaty and the establishing of a National Missile Defense. The system may cripple China’s nuclear deterrence, which currently rests on a minimal strategic nuclear force. Israel, on its part, maintains a policy of neither confirming nor denying the existence of a nuclear arsenal, and as yet is not interested in nuclear transparency (Cohen 1998).

Similarly, India and Pakistan refuse to end production of fissile materials for
building bombs – despite India’s long-standing claims of favouring a verified FMCT. The US–Indian nuclear agreement announced in July 2005 and reiterated eight months later does commit India to ‘working with the United States for the conclusion of a multilateral Fissile Material Cut Off Treaty’ (Indian Embassy and George W. Bush 2006). Critics have argued that the far-reaching exceptions to existing international nuclear non-proliferation practices outlined in the bilateral deal are not beneficial to the non-proliferation regime (Arms Control Association 2006). As of October 2006, consent to the controversial nuclear deal had yet to be given by the US Congress, as well as by the Nuclear Suppliers Group.

Also, certain NWS such as Russia, although interested in some benefits of the FMCT (especially drawing some states outside the NPT into some nuclear regime) are unwilling to provide the transparency of their nuclear installations that would be necessary for verification. Examples are locations at which not only fissile material production has taken place, but also nuclear warhead production.

However, with the right framing and timing, all of the above challenges are likely to be solvable – either one by one or collectively – through a mix of political incentives and technical fixes. Currently, the main, overarching FMCT obstacle seems to be the general fading interest of some major players in verified arms control. In July 2004, during the third session of the CD, the Bush administration suddenly announced that it had ‘serious concerns about whether realistic, effective verification of an FMCT is achievable’ (Treaty Information Centre n.d.).

US reluctance to FMCT verification

On 19 May 2006, the United States submitted a White Paper on a Fissile Material Cut-off Treaty to the CD in Geneva, following its draft mandate for negotiating a Fissile Materials Cut-off Treaty and a draft text of a Fissile Materials Cut-off Treaty. The draft treaty put forward does not include any verification provisions, due to Washington’s claimed lack of confidence in the possibility of monitoring compliance with an FMCT. According to the US representative to the CD, Ambassador Jackie Sanders, ‘The objective of an FMCT is not its verification, but the creation of an observed norm against the production of fissile material intended for weapons’.4 In the view of the US, there is a risk of providing a false sense of security: any appearance of effective verification without supplying its reality could be more dangerous than having no explicit provisions for verification. In sum, in the new US position, the treaty remains an asset – but verification has become an unreliable nuisance.

Not only does the stance of the George W. Bush administration contradict previous US government assessments about the verifiability of an FMCT (Guhin 1999), it also puts the United States at odds with many of its key allies – including the United Kingdom and France. And it terminates the consensus of the Shannon negotiation mandate that calls for a ‘verifiable treaty’.

Why such reluctance to a verified treaty? While the United States believes
that achieving an end to the production of fissile material for nuclear weapons is a desirable goal, and has reaffirmed its moratorium on the production of fissile material for nuclear explosives, strong voices within the Bush administration (e.g. DeSutter 2005) have taken the position that it would be very difficult if not impossible to establish an effective inspection system for an FMCT. It is held that verification not only would be demanding, but would also require extremely intrusive inspections, such as sampling in and around facilities. This would not be deemed acceptable to the US Department of Defense or other domestic security agencies, as it might pose a danger of compromising national secrets. Moreover, it is claimed that it would be very hard to verify the absence of clandestine enrichment facilities, and difficult to distinguish between material produced prior to and after a production cut-off date.

**Brief assessment of the US verification stance**

Verification cannot ensure compliance. Every attempt to reach agreement on verification raises questions about the nature, scope and appropriate forms of compliance evaluation (Gallagher 1999: 56). What verification might do, if the control regime is effective, is to produce convincing evidence of non-compliance – but there will always be an element of uncertainty. Moreover, verification requires political as well as financial investments.

Washington has yet to present a public account of the interagency review assessment leading up its current stance on verification. So far, only limited explanation has been given (see US Department of State 2004b). However, though proper FMCT verification – taking sensitivity concerns into consideration – may be challenging, it is indeed feasible.

This indicates that political considerations and not verification capability as such could be the primary explanation for the US reluctance. This reasoning follows a scheme that can be observed in many other international environments: the US administration is not very interested in any restrictions on its own activities that would be imposed by international commitment (Müller and Schaper 2004). Almost exactly the same argumentation was put forward in connection with the US rejection of the BWC verification protocol: it would be too intrusive, and it would not guarantee compliance anyway.

The truth may be hidden under a pretext of rigid verification demands and technical challenges – a preferred approach for unilateralists and arms control antagonists (Gallagher 1999: 44). Followers of this line may effectively come to transform the popular slogan of the Reagan era, ‘trust but verify’, into an implacable ‘don’t trust – don’t verify’. As the following section shows, the US approach effectively denies the international community the ability to monitor and enforce compliance with a formal and unified production halt. Lacking a forward-looking perspective, current positions have become cemented, while fissile material production continues.
Why a verified FMCT?

Ending the non-safeguarded production of fissile materials would make a significant contribution to international nuclear disarmament efforts and international non-proliferation activities alike. Technically, plutonium and/or highly enriched uranium (HEU) are the essential ingredients of any nuclear explosive. Controlling the fissile material is therefore fundamental for controlling nuclear proliferation and for providing the basis for deep, transparent and irreversible reductions in nuclear arsenals. This well recognized fact was expressed in a US fact sheet on the FMCT issued in the late 1990s (US Department of State 1999b):

Efforts to reduce nuclear weapons can go forward with much greater certainty if all fissile material production is subject to legally binding verification measures that: a) provide confidence that other states are not producing fissile material production for nuclear weapons, and b) lay a legal foundation for further nuclear disarmament measures.

There are numerous proliferation challenges that are not likely to be responsive to the threat of coercion and that could be adversely affected by an excessive emphasis of military options (Nolan et al. 2003: 239). In contrast, a verified FMCT would provide nuclear arms control benefits by:

- Capping the quantity of fissile material available for nuclear weapons globally.
- Extending verification measures to fissile material production facilities not currently subject to international monitoring.
- Making the current unilateral, political moratoria on fissile material production for nuclear weapons by the United States, the United Kingdom, France and Russia legally binding and subject to international verification.
- Extending the NPT prohibition on production of fissile material for nuclear weapons to the five official nuclear-weapon states and the four NWS outside the NPT.
- Strengthening the non-proliferation regime by formally fulfilling a requirement of nuclear disarmament.

(Points based on US Department of State 1999b.) Another important reason for an FMCT is the need for better international ‘nuclear housekeeping’ in the NWS. Although these countries possess by far the largest stocks of weaponusable material, and although their stocks are a proliferation danger and pose a risk to international security, they still perceive their nuclear complex as solely a national affair. In contrast, the civilian nuclear complexes in NNWS are subject to international control, and their possessors are obliged to meet standards of material accountancy and control. The obligations and regular inspections in NNWS have led to a different ‘nuclear security culture’: the recognition that
nuclear materials are not only a national affair but an international concern is a deeply rooted philosophy that has led to precise material accountancy, control and natural internal transparency.

In contrast, despite voluntary safeguards agreements on limited parts or all of their civilian nuclear activities, the NWS are now exempted from international control. With some noteworthy exceptions, accurate information on stocks of nuclear material is lacking. Not even aggregate figures for nuclear-weapon stockpiles are known. Some NWS have neglected their material accounting for many years, mainly because there was no obligation; this probably applies also to the nuclear-weapon powers outside the NPT, of whose nuclear accountancy and security little is known. Verification under an FMCT would introduce the obligation to report to the international community on at least some of their nuclear activities. As a consequence, the nuclear security culture would also change, as in NNWS.

Ideally, an FMCT would represent a first-ever set of compulsory safeguards in these nuclear-weapon states. To all countries, it would help to demonstrate the NWS’s commitment to fulfilling their obligations in accordance with Article VI of the NPT. Their compliance with reporting requirements in accordance with the NPT would be boosted as well.

The US claim that the FMCT is not verifiable bears a serious danger to the non-proliferation regime as a whole: the scope of the NPT is more far-reaching than that of an FMCT. The notion that it is not possible to verify an FMCT implies that also the NPT is not verifiable, and that IAEA safeguards may not be worth the effort. Safeguards under the NPT are devaluated and their importance as well as acceptance could fade.

**FMCT verification**

The verification method that creates the highest assurance that no material is illegally diverted is material accountancy. Material accountancy, based on reports of all spent fuel produced after the treaty enters into force, should be established by the verification authority and followed downstream until the defined termination point of verification. Material accountancy will have to be implemented nationally by each state anyway. The new obligation for NWS and states outside the NPT would be to pass information on to the verification body.

Verification depends on the scope (see below). But even if the scope is limited and does not incorporate previously produced materials, there are wide variations in possible verification scenarios. First, however, the task of verification should be made clear. In the case of the most limited scope, it is to create assurance that no nuclear material that can be used for a nuclear explosive is diverted for other than legal purposes.

This is almost the same as is the verification task in NNWS under the NPT. The basic difference under an FMCT verification regime would be that NNWS would not be allowed to possess non-safeguarded materials from earlier production, while the others might eventually be allowed a ‘black box’ containing
previously produced material exempted from verification. In this case, it would be important to ensure that material produced in the future is not falsely declared as earlier production. If civilian material were to be left out, it could eventually be declared as earlier production and diverted to military use. Ideally, then, all civilian and military materials produced after entry into force should be put under safeguards.

Over the years, the safeguards system has constantly developed to respond to changing challenges. In the early 1990s, several measures were applied within the framework of existing safeguards agreements (based on INFCIRC/153 (Corr.)). With the 1997 additional protocol (INFCIRC/540 (Corr.)), a range of new strengthening measures were authorized. With the adaptation and implementation of the additional protocol, safeguards will become even stronger and more efficient, and many of the methods and techniques are widely applicable to the FMCT as well.

Although it will be disputed to which extent and with which level of intrusiveness they will be applied, methods of verification will hence resemble those in nuclear safeguards under the NPT. They include declarations on status and design information, material accountancy, containment and surveillance techniques, inspections and detection of undeclared activities.

Environmental sampling has, for instance, proven itself a highly effective measure for detecting undeclared nuclear material and unlawful activities. Commercially available satellite imagery of high resolution is routinely used for safeguards purposes, for example to control declarations submitted by states, during planning of inspections and complementary access, and to resolve questions regarding possible undeclared nuclear activities. Moreover, in the wash of the illicit trade of Dr A.Q. Khan, IAEA has improved its capabilities for investigating and analysing covert nuclear technology networks.

While closed facilities pose less problems for verification, even non-intrusive verification inside nuclear-weapon maintenance and dismantlement facilities is, at least initially, unacceptable for NWS. Some of these activities release indicators and traces that might look similar to clandestine production, e.g. purification of plutonium for re-fabricated warheads. Many technical details of these activities cannot be revealed. In Russia, weapons refurbishment facilities and fuel-cycle facilities are often co-located (e.g. in Mayak). This is probably the case for other nuclear weapon-capable states as well, like India.

Transport of weapons and components to and from weapon dismantlement or re-fabrication facilities cannot be submitted to inspections. Although it is recommendable and probably possible to verify to a certain extent the dismantlement of warheads, this should be negotiated independently from the FMCT. The absence of illegal enrichment or reprocessing could still be verified from outside with some confidence by environmental monitoring of effluents.

Therefore, the treaty will need a provision for exempting such facilities from the general verification procedures and replacing them by special verification provisions which can reduce the intrusiveness of on-site inspections and enhance the significance of containment and surveillance techniques with additional
managed-access provision. Moreover, as some NWS have never been subject to full-scope safeguards, some of their facilities have not been designed for this, and special technical problems arise. They do not have equipment that facilitates the taking of samples, e.g. measuring points that allow easy access, and material balance areas could be technically difficult to implement.

Bookkeeping might have been carried out in very different ways than in NNWS. In particular, the incentive to take physical inventories may not have been not strong because there never was the need for international justification. Technically, it is far more difficult to introduce such equipment and installations afterwards than at an early stage, while the facility is being designed and constructed. In addition, some countries do not have legal bodies comparable to a state system of accounting for and control of nuclear material as per IAEA standards.

Because of these problems, it is to be expected that certain time-scales after entry into force will be necessary for the implementation of the verification. In the treaty text, states should be allowed time to declare such facilities. It should be recognized that material accountancy and its verification according to the agreed standards might not be possible initially. Measures acceptable for a start and timetables for improvement must be agreed individually with the respective states.

Another problem may arise if some states want to keep the option to produce HEU for naval fuel, as HEU destined for naval uses could be diverted for clandestine weapons programmes. While a legally binding norm governing the production of weapons-usable materials is highly desirable in its own right, a treaty allowing for naval HEU production would hardly help to build confidence between the parties, who would feel unsure that the treaty is being implemented effectively and comprehensively.

In case the option for the production of new HEU naval fuel is kept open, starting and termination points of verification will need to be defined more precisely than in INFCIRC/153. Facilities and locations involved are the enrichment plants, fuel fabrication plants, transports, storage and the reactors themselves. The fuel elements seem to be a highly classified secret, but verification should follow the HEU until insertion in the reactor. At the fuel factories, the fuel storage sites and the transports, special managed access provisions should be worked out, by using containers, tags, seals, etc.

The FMCT in an arms control context

The current FMCT discussion is characterized by extreme positions and a deadlocked negotiating context. From the very beginning, there were different ideas as to what the scope of the FMCT should be, reflecting differing preferences with regard to nuclear non-proliferation and nuclear disarmament. Disagreement on the scope also dominated the negotiations on a mandate text in the CD. This can be seen in the compromise formula of the Shannon mandate, which focuses on future production of materials, but opens up for addressing other issues such as materials produced before entry into force of the treaty.
Much of the international community wishes substantial nuclear disarmament. These countries would prefer a treaty that not only bans future production but also manages to reduce the amount of the existing materials or eliminate them altogether. For other states, the primary focus is on finding a way of pulling states outside the NPT into the non-proliferation regime. They would prefer a narrower scope, perhaps one restricted to future production, in the hope that this might be more readily acceptable.

Moreover, most NWS do not want the international community to address their existing nuclear material stocks. However, notions of ‘incorporation of stocks’ or ‘inclusion of previously produced materials’ are totally unclear, with a wide range of possible meanings. But, hidden by the ‘stocks/no stocks’ dispute, is also the fact that an FMCT might both benefit from and contribute to other planned or on-going nuclear arms control activities, whether formalized or ad hoc in character.\(^\text{12}\)

**FMCT and the Nuclear Non-proliferation Treaty**

In 1995, the demand for an FMCT was part of the Principles and Objectives for Nuclear Non-proliferation and Disarmament of the NPT Review and Extension Conference, set forth as part of a package of provisions for acceptance to make the NPT permanent. As such, parties to the NPT have an FMCT obligation to fulfil. Many states regard the Principles and Objectives as a more specified interpretation of the NPT, but Washington has repeatedly sought to interpret them as a ‘secondary document’ (see Müller 2000, especially p. 18).

As mentioned, the 2000 NPT Review Conference reaffirmed the importance of a Fissile Material Cut-off Treaty. It specifically called upon the Conference on Disarmament to commence negotiations immediately, this time with a view to its conclusion within five years. The FMCT is the only obligation in the final document of the Review Conference assigned a specific timetable for completion, as had been the case with the CTBT in the 1995 document. This indicates the prominence assigned to such a treaty by the NPT parties. While the obligation is of a political, not legal, character, failure to establish an FMCT will directly affect the future of the Nuclear Non-proliferation Treaty.\(^\text{13}\)

One solution could be to negotiate a framework convention on fissile materials, outlining the object and purpose of the prohibition and link the convention to the modalities of the NPT process. Subsequent convention protocols or other agreed documents would form the substance of various connected obligations, including those related to verification.\(^\text{14}\) As such, some of the political impasse on verification may be circumvented.

**FMCT and UNSC Resolution 1540**

On 28 April 2004, the UN Security Council unanimously adopted Resolution 1540 from a draft text submitted by the US delegation to the United Nations. This resolution requires all UN member-state governments to undertake a series
of measures to prevent the proliferation of biological, chemical and nuclear weapons; their delivery systems and related material; and particularly to prevent their transfer to terrorists and other non-state actors. It specifically prohibits countries from providing any kind of support to non-state actors for the development of weapons of mass destruction (WMD), and mandates that state adopt laws to prevent the diversion of WMD and related material (Millar and Mærli 2005).

Resolution 1540 was adopted by consensus, and identifies important measures to reinforce international non-proliferation through strengthened regulatory order. It strengthens the international non-proliferation regime by calling upon all states ‘to promote the universal adoption and full implementation, and, where necessary, strengthening of multilateral treaties to which they are parties, whose aim is to prevent the proliferation of nuclear, biological or chemical weapons’. As such, the resolution may help to foster and legitimate negotiations and implementation of an FMCT – and in turn, an FMCT may boost implementation of the resolution.

However, the legal link between the resolution and the future FMCT is weak. While the UN Charter stipulates that any UNSC decision is binding upon member-states and that the Charter has precedence over bilateral or multilateral agreements, Resolution 1540 does not explicitly mention a cut-off of fissile material production for weapons purposes. Its greatest contribution is likely to lie in effectively outlawing, in all UN member-states, the involvement of individuals or non-governmental organizations in WMD procurement. While important, the linkages between the FMCT and the resolution are more indirect than for instance the relationship between the FMCT and the NPT.

**FMCT and ad hoc nuclear security initiatives**

In the post-Cold War environment, some states have been providing practical security assistance to other states in order to reduce common threats. Since the early 1990s, various new nuclear security initiatives have been initiated.

Bilateral programmes, mostly US–Russian, have been many: from those aimed at securing or destroying weapons and weapons-usable materials in the former Soviet Union, at combating trafficking in illicit nuclear materials, at engaging out-of-work weapons scientists, to those focused on physically downsizing Russia’s nuclear-weapons complex. The terrorist attacks of 9/11 also spurred a wave of multilateral security initiatives – most notably the G-8 Global Partnership against the Spread of Weapons and Materials of Mass Destruction, the Proliferation Security Initiative and the Global Threat Reduction Initiative.

The most prominent *ad hoc* nuclear security effort has been the Cooperative Threat Reduction (CTR) Programme. Its goal is to prevent the proliferation of WMD and related materials, technologies and expertise from the former Soviet Union. This includes providing for the safe and secure destruction of Soviet Era WMD, associated delivery systems and related infrastructure. The CTR acronym is now used to cover a range of practical measures aimed at reducing
threats from the Cold War. Efforts to broaden the programmes and the list of recipient states have been pursued under the rubric of Extended Cooperative Threat Reduction.

A central feature of CTR activities is their flexibility. CTR activities offer an opportunity to pinpoint counter-measures at particular nuclear sites, in selected recipient states. Less stringent schemes of verification and control allow for highly opportunistic approaches, where these are pertinent. If relations between two or more states are ripe, and if appropriate technical means for important proliferation problems are available, CTR activities may provide quick and effective solutions to proliferation challenges. At the same time, CTR shares many of the principal goals of institutionalized nuclear arms control.

Examples of CTR activities beneficial for an FMCT include efforts to implement technical and bureaucratic procedures for nuclear material protection, control and accountancy that are compatible with international standards. The high level of CTR flexibility translates into less stringent obligations on behalf of the actors involved. Linked to fissile material challenges associated with the FMCT, the extension of CTR activities in new recipient states could serve as a door-opener for general FMCT discussions. Such initiatives may also fit better with Washington’s current FMCT approaches, de-emphasizing formalism.

**FMCT and nuclear stockpile guidance**

Optimal stockpile protection and control rest upon adequate conceptual understanding of the security means available, as well as proper implementation and maintenance of these means. Ideally, the concepts of protection and control should be based on a set of generally accepted principles for fissile material management. Appropriate nuclear security rests fundamentally upon (Walker and Berkhout 1999: 32):

- Minimization, where stocks of weapons-usable material are to be significantly reduced in order to facilitate non-proliferation efforts and to discourage nuclear arms races.
- Irreversibility, with no return or diversion of weapons-usable material for weapon purposes.
- Effective protection, control and accountability, where stocks of nuclear material should be safe from theft and diversion, and the responses to such events, if they occur, should be swift and comprehensive.

All FMCT states could commit themselves to adhering to these principles for dealing with all existing stocks in the future. This would fit well with the norm-building desires now expressed by the United States, and could contribute significantly to the security of the material. Provision could be envisioned for transparency and information exchange on stockpile holdings. For all nuclear activities, detailed material balances could be demanded, perhaps eventually leading to the establishing an international Fissile Material Register.
under UN auspices. An incremental approach could allow for increasingly larger stocks of fissile material to be covered by international control, as political, technical and financial contexts mature. South Africa has proposed such an incremental approach, involving initial declarations of fissile material that could be gradually expanded to include more and more material (South Africa 2002).

**FMCT and excess declarations**

Large stocks of weapons usable material remain a global threat. By the end of 2003, estimates – with uncertainties up to 20 per cent – indicated stocks of more than 3,700 tonnes of plutonium and highly enriched uranium in some sixty countries (Albright and Kramer 2004: 14). Approximately two-thirds of the material has been produced for military purposes. Only a fraction is actually used in existing nuclear arsenals, and more than half of the total quantities of weapons usable material are superfluous to military requirements (Albright et al. 1997).

With the end of the Cold War came initiatives to declare portions of the stocks of nuclear material in excess of national security needs, eventually to be put under international control, or eliminated.20 Particularly important in this context is the Trilateral Initiative involving the IAEA, the United States and Russia. Its task is to work out procedures under which weapon-origin and other fissile materials released from defence requirements in Russia and the United States – in classified or unclassified form – could be submitted to IAEA verification (Shea 2001). As yet, however, only miniscule amounts of weapons usable material have been submitted under the initiative, even though earlier technical and legal challenges have been solved and all three parties have signed a working agreement.

**FMCT and Euratom safeguards**

Euratom’s safeguards are more intrusive and comprehensive than those of the IAEA (see Schmitt 2003: 46). Moreover, they do not discriminate between nuclear-weapon states (France, the United Kingdom) and non-nuclear-weapon states with regard to their civilian nuclear fuel cycles. In effect, there is a British reprocessing plant (B205) formerly used for military purposes that now is under EurAtom safeguards. This experience may be valuable in conjunction with the conversion and eventual FMCT verification of former Soviet nuclear production facilities.

European states could contribute to the effective treaty implementation by pursuing alternative verification options. French and British nuclear facilities could serve as locations for field-testing of verification equipment and training grounds for future FMCT inspectors. As a start, a study should investigate to which extent the British, Russian and other cases are comparable, as British and Russian facilities differ with regard to safeguards feasibility.
The proliferation risks from the enrichment of uranium and from the reprocessing of spent fuel are increasingly being recognized. Both processes may provide routes by which signatories to the NPT can (and indeed have) clandestinely pursued unlawful activities designed to give them the option of acquiring nuclear-weapon capability. This has spurred widespread and renewed interest in multilateral fuel production and supply instead of producing fissile materials solely under national control.21

The US President has proposed that reprocessing and enrichment technology be denied to certain countries (White House Press Office 2004). Bush suggested ‘closing the loophole’ presented by Article IV of the NPT by denying enrichment and reprocessing technologies to countries that do not already possess them.22 He also called on the Nuclear Suppliers Group (NSG) to make supply of such technologies contingent on endorsement of the Additional Protocol. But this would probably require an extension of the mandate in Article III.2 of the NPT – or perhaps a reinterpretation of Article IV. The latter is definitely unacceptable to many countries.

A variant is the proposal to internationalize nuclear fuel production, for example by permitting production only in international cooperation. An international study team, hosted by the IAEA, has published a report on this idea (International Atomic Energy Agency 2005a). Although this seems an attractive option, the report makes it clear that achieving international consensus on this proposal will be challenging. Any direct incorporation into FMCT scope and negotiations is likely to complicate matters. On the other hand, issues of internationalized fuel supply are likely to be brought up at future FMCT negotiations. While a general ban on civilian production is certainly unacceptable to many states, some regulations on civilian production, in addition to those already existing, might be contemplated.

In parallel, the use of HEU fuel in research reactors has been reduced through cooperative efforts to develop low-enriched uranium fuels as replacement. Moreover, active fuel repatriation programmes for US and Soviet/Russian HEU have been initiated. Also such efforts could be envisaged as part of a future fissile material security regime. Any reduction of fissile material in the civilian sphere will be beneficial to an FMCT.

**Conclusion**

Perhaps it is due to complacency, or perhaps to the strain and wear and tear of years of political wobbling. However paradoxical it may seem: in the current security environment there is now an urgent need to revitalize global political interest in a Fissile Material Cut-off Treaty, with its many advantages for nuclear arms control and nuclear threat reduction.23 The FMCT will simply have to be made relevant for a new era. The treaty should be apt for meeting novel threats and new safeguarding challenges. The target states for a future FMCT are the nuclear-weapon states – states that have become comfortably accustomed
to decades of complete nuclear autonomy. A mental shift in making nuclear matters an issue of international accountability rather than a pure national business may be demanding.

As with any arms control treaty, contracting states will need to see it as more beneficial to join the FMCT than to stand outside. There must be clear security rewards, and any progress will rest upon recognition of the interests of all the parties involved. It is here that the merging of the disarmament goals and the non-proliferation benefits of a cut-off comes fully into play.

If an FMCT is to become reality, however, it will need to mediate both old and contemporary nuclear security threats, and to bridge traditional non-proliferation approaches and evolving counter-proliferation strategies. An FMCT for the twenty-first century should build upon the increased international sensitivity to fissile material security. Rather than becoming an end itself, its potential as an effective means and possible policy driver for nuclear stockpile security should be vigorously exploited. FMCT interactions with other on-going arms control efforts could become strong, and mutually reinforcing. The FMCT ‘orphan’ may serve well as a nuclear security bellwether.

Important synergies between the range of existing and emerging nuclear security initiatives and a future FMCT should hence be identified, and, ideally, formalized in working agreements. For instance, there are probably under-utilized synergies between the FMCT and UNSC Resolution 1540. Reductions in fissile material stocks, stockpile production and possession will also inherently benefit the treaty – and vice versa. FMCT preferences by states will be reflected in the scope and applicability of the treaty. Its impact on national, regional and global nuclear security may vary accordingly. Enforcement and compliance – two elements frequently stressed by the United States in discussions on non-proliferation – are key issues for an effective cut-off. However, early detection of non-compliance, and hence apt enforcement, rests fundamentally upon verification. As such, legally binding, verified, multilateral arrangements, remain an essential tool for dealing with the security challenges of nuclear material.

Technically, verification of an FMCT is feasible. The current problems associated with a verifiable Fissile Material Cut-off Treaty are political in nature. Whereas a non-verified FMCT may seem tempting, its role as an effective arms control tool would be miniscule. The US decision to have a non-verified FMCT represents a serious setback to the process, as the strength, integrity and many expected nuclear security benefits of the treaty will be lost.

Moreover, the FMCT verification schemes envisioned by states other than the United States are based largely on the techniques and measures developed through years of safeguards implementation and control. As such, the US stance on FMCT verification raises inopportune questions about the viability of the entire safeguards system.

In particular, Washington should reassess the technical control options and opportunities, and revert to its former position on FMCT verification. It needs to start working actively in the direction of ‘a non-discriminatory, multilateral and internationally effectively verifiable treaty’ – politically as well as technically.
Notes

The authors specifically wish to thank Andreas Persbo and Marius Bjørningstad for valuable comments and inputs during the preparation of the chapter.
1 The expression ‘policy driver’ for the FMCT was coined by William Walker.
3 The mandate, accepted by the conference, included taking up the stockpile issue if the negotiating parties so agreed: see Johnson 1995.
4 For full text of Sanders’ statement, see usinfo.state.gov/is/Archive/2004/Nov/01-441408.html.
5 Kimball elaborates on this in 2004: 1.
6 Borrowed from a headline in The Economist 2004: 47.
7 No fissile material, no nuclear devices. This is equally true of the first generation of pure fission weapons, such as those used on Hiroshima and Nagasaki, and modern weapons, which achieve most of their yield from thermonuclear fusion. In the latter case, a fission explosion is required to ignite the fusion reaction.
8 Model Protocol 1998. According to this protocol, each signatory state must provide additional information about and allow inspectors access to all aspects of its nuclear fuel cycle. The major aim is to detect undeclared activities. Some elements of the Additional Protocol might be similarly useful in FMCT verification.
9 For descriptions of these various techniques see Schaper 2001.
11 Possible verification schemes for naval nuclear fuel are discussed in Mærli 2003.
12 One specific example is the International Plutonium Guidelines (INFCIRC/549), agreed to by nine states holding plutonium (Belgium, China, France, Germany, Japan, Russia, Switzerland, the United Kingdom and the United States). Here it is stipulated that all states holding plutonium should voluntarily disclose the figures of their stocks, including what is contained in spent fuel.
13 However, the 2005 Review Conference failed to provide any progress on an FMCT – or any other nuclear security issues; it even failed to refer to previous NPT documents.
14 Andreas Persbo, personal communication, January 2006.
15 See e.g. the Charter of the United Nations, Article 48.1 and Article 103, respectively.
16 For a description, see Chapter 14 in this volume.
17 Originally, the term Cooperative Threat Reduction (CTR) was applied to US–Russian efforts to reduce the risk posed by WMD, and was used mainly by the US Department of Defense. Now it has been extended to cover also similar efforts between other countries.
18 For a discussion on ad hoc nuclear security initiatives versus institutionalized arms control, see Mærli 2005.
19 First discussed in Albright et al. 1997: last chapter; see also Schaper 2004, section 3.3.
20 To date, the United States has designated 52.5 tons of plutonium and 174.3 tons of HEU as excess, and Russia reciprocated by designating ‘up to’ fifty tons of plutonium and 500 tons of HEU as excess. The United Kingdom has declared 4.4 metric tons of plutonium in excess of national security needs. No other NWS have offered similar declarations.
21 For a notable analysis, see International Atomic Energy Agency 2005a.
Article IV stipulates 'the right to participate in the fullest possible exchange of equipment, materials and scientific and technological information for the peaceful uses of nuclear energy'.

A case for arms control and recommendations drawn from negotiation experiences is to be found in Mackby et al. 2004.
Like something out of a Tom Clancy novel, scores of casually dressed government nuclear scientists with sophisticated radiation detection equipment hidden in briefcases and golf bags were scouring major US cities for radiological, or ‘dirty’, bombs on Christmas Eve (Mintz and Schmidt 2004). In 2003, this actually happened. The search was started after there were indications of an imminent nuclear terrorist attack.

The teams canvassed five cities, taking measurements continuously, to protect the US homeland against international terrorism. After a week of probing, the investigators suddenly detected radiation at a downtown storage facility in Las Vegas. This finding sent a jolt of tension through the nation’s security apparatus. The White House was even notified. In the midst of the resulting chaos and massive responses, however, the ‘bomb’ turned out to be a therapy radium source, inadvertently held by a homeless man.

A false alarm indeed – or perhaps more a false manoeuvring? Finding radioactive sources in a haphazard way in a busy city environment is challenging. Identifying fissile material may be next to impossible: the radiation signatures are weak, the quantities needed for a workable nuclear device are small, and there are many possible targets and locations for assembling a weapon. In reality, efforts to detect and interdict nuclear smugglers are unlikely to reduce the likelihood of successful transfers of nuclear material to a level anywhere close to zero (Allison et al. 1995).

However, denying perpetrators uranium and plutonium – essential ingredients for any nuclear explosive – offers a unique opportunity for preventing nuclear terrorism and for nuclear security-building in general: no fissile material, no bomb, no nuclear terrorism (Allison 2004). This understanding underpins contemporary international nuclear non-proliferation assistance.

Since the early 1990s, provident nations have assisted other states in securing, reducing and eliminating weapons of mass destruction and associated delivery means and technologies. It is a unique post-Cold War tool that fills the gap between diplomacy and negotiation, on the one hand, and sanctions and military action, on the other hand (Luongo and Hoehn 2005). The largest donor state is the United States, with the increasing support of states that were part of the Western bloc during the Cold War. The main recipients are the fifteen states that
were formerly republics of the Soviet Union. The number of states that participate in such programmes continues to increase, on both the donor and the recipient side.

It is hard to find an all-encompassing definition of today’s cross-border non-proliferation measures and nuclear security. Some activities are called ‘cooperative threat reduction’ or ‘extended cooperative threat reduction’ programmes. However, ‘Cooperative Threat Reduction’ (CTR) has, since the programme started, referred to the original US assistance to Russia that was later extended to other states. Therefore, ‘(extended) cooperative threat reduction’ hardly accounts for programmes and activities launched and implemented by other states, especially since some states have had different priorities, foci and activities from those of the US CTR programme.

In order to avoid misunderstandings and find a term that is both broad and simple, it is suggested here to use the notion international nuclear non-proliferation assistance and let it cover the broad definition established by Anthony (2004: 6): ‘[P]ractical measures to enhance security jointly implemented and with consent on the territory of one state by a coalition of parties that may include states, international organizations, local and regional governments, non-governmental organizations (NGOs) and the private sector’.

As ad hoc international non-proliferation assistance shares many of the goals of the institutionalized non-proliferation regime, one may intuitively expect a positive and linear relationship of mutual synergy. However, the means and philosophies at play in the assistance programmes and the treaty regime sometimes differ quite substantially, creating a diversion rather than a conversion. In fact, some of the activities, orientations and issues of international non-proliferation assistance may create obstacles to further progress in the established, formalized global non-proliferation regime.

This chapter will discuss these issues. First, it presents a short overview of the birth and evolution of international nuclear non-proliferation assistance. This sets the scene for a discussion of the forces that explain the development of international nuclear non-proliferation assistance. It then compares the global perspectives and treaty-based requirements concerning non-proliferation with those of a more ad hoc character in international nuclear non-proliferation assistance. This facilitates an assessment of how interoperable treaty-based and ad hoc arrangements are. The chapter ends by summarizing how and where international nuclear non-proliferation assistance has contributed to a strengthened non-proliferation regime.

**International nuclear non-proliferation assistance**

For outside observers – as well as for practitioners – it is virtually impossible to have an overview of all the many states, authorities, programmes, schemes, objectives and joint cooperation projects in the field of nuclear non-proliferation assistance. There are many active donors as well. Canada, Finland, France, Germany, Italy, Japan, the Netherlands, Norway, Sweden, Switzerland, the
United Kingdom and the United States now all have roles in the on-going cooperation activities. Several international organizations are also involved, among them the International Atomic Energy Agency (IAEA), the European Bank for Reconstruction and Development (EBRD) and the European Union (EU).

Moreover, NGOs play an important role in disseminating knowledge of the proliferation risks and the activities to diminish the risks: some NGOs have even contributed actively with funding and expertise to non-proliferation assistance. Furthermore, the list of actors contributing to non-proliferation and nuclear security outside their own borders is even longer when financial contributions to the budget of the European Union, the Nuclear Security Fund of the IAEA and the ‘Nuclear Window’ of the EBRD are taken into account. Additionally, some states have pledged but not activated assistance, and there are also states that let their activities and assistance be implemented through another state (Carson 2005).


By late 1991, considerable anxiety had accumulated in the West as to whether the Soviet Union was capable of controlling its large nuclear-weapons arsenal and about where the some 60,000 scientists employed by the Soviet nuclear-weapons complex would find employment in the future. There were uprisings and unrest in several Soviet republics, communist rule and the monopoly of power were being challenged, and voices in favour of independence were heard across the Soviet Union. Moreover, the Soviet dominance over Eastern Europe had become defunct. An economic crisis followed, accompanied by fears that the Soviet Union would be unable to control its nuclear-weapons complex and honour its obligations to reduce its strategic nuclear-weapons arsenal in accordance with the US–Soviet START I Treaty.

These dire prospects led US Secretary of State James Baker and German Foreign Minister Hans-Dietrich Genscher to suggest an international fund and institution that could engage scientists from the Soviet nuclear-weapons complex and employ them in civilian sectors. In early 1992, the idea was approved by President Boris Yeltsin as well as by the heads of state of Japan, the United States and the European Community. The initiative led to the establishment of the International Science and Technology Centre in Moscow (with branch offices in Armenia, Georgia, Belarus, Kazakhstan and Kyrgyzstan) and the Science and Technology Centre of Ukraine in Kyiv. Here, about half of the scientists and engineers from the former Soviet nuclear-weapons complex have been involved in new civilian and internationally financed projects for various periods of time.

In parallel, another initiative was being launched to control the Soviet and later Russian strategic nuclear weapons. US Senator Sam Nunn had visited the Soviet Union in the autumn of 1991, after the unsuccessful coup against Soviet President Mikhail Gorbachev in August. The visit had revealed that there were reasons to question whether Moscow had at all times during the coup been able to maintain control over the Soviet nuclear weapons.
US Senator Nunn, together with senators Richard Lugar and Les Aspin, presented a bi-partisan initiative to Congress, aimed at promoting US security assistance to Russia in the field of nuclear weapons. In March 1992, this led to the passing of the Soviet Nuclear Threat Reduction Act, which resulted in the ‘Nunn–Lugar programme’ or Cooperative Threat Reduction Programme. It comprised activities that facilitated the withdrawal of thousands of former Soviet nuclear weapons and missiles from Belarus, Kazakhstan and Ukraine and their transfer to the Russian Federation. Moreover, assistance was given to Russia for establishing safe storage sites and systems for nuclear weapons, as well as providing assistance for the dismantlement of nuclear weapons, missiles, strategic submarines and heavy bombers in accordance with the START I Treaty.

In 1993, the United States and Russia signed the HEU Agreement, or ‘deal’, also known as ‘Megatons to Megawatts’, under which 500 tonnes of HEU would be extracted from dismantled nuclear warheads and then be down-blended in Russia and transported to the United States for use as nuclear fuel in US nuclear power plants. The two countries also agreed that each would dispose of fifty tonnes of plutonium. (In June 2000 they reduced this figure to thirty-four tonnes for each party, to be disposed of as of 2014.) As of end-June 2006, 55 per cent of the 500 tonnes of HEU had been down-blended to low enriched uranium (LEU) for commercial use and electricity generation. The elimination has proceeded according to schedule, and all 500 tonnes are to be down-blended to LEU by 2013.

In the field of nuclear safety and nuclear waste management, several states (among them Canada, Sweden, Germany, the United Kingdom, France and Finland) and organizations such as the EBRD and the EU, with its Technical Assistance to the CIS (TACIS) programme, provided assistance. However, in the mid-1990s relatively few actors other than the United States were engaged in nuclear non-proliferation assistance. Among them, France provided radiation protection and safety-related infrastructure and support to Russia for the dismantlement of nuclear warheads (Orlov 2002a: 119–21), and the United Kingdom provided vehicles and containers for the safe transportation of nuclear warheads (Cornish 2003: 192–3).

Sweden was active in promoting national nuclear export control systems in the Baltic states as well as adherence to the nuclear Non-proliferation Treaty (NPT) and the establishment of accountancy systems at facilities and state systems for accountancy and control in Lithuania, Kazakhstan and Ukraine from 1992. This was done in order to facilitate early entry for the three countries into the IAEA safeguards system, once NPT accession had been achieved and safeguards agreements had been signed with the IAEA.

**New needs and new responses, 1996–2001**

Throughout the 1990s, problems of inadequately protected nuclear materials at hundreds of facilities persisted across the territory of the former Soviet Union
The rapid increase in the number of detected cases of illicit trafficking of nuclear and radioactive materials was a stark demonstration of the state of nuclear security affairs. In April 1996, the Group of Seven (G-7) industrialized nations held a summit meeting in Moscow, with the participation of the Russian Federation; it concluded with a declaration calling for concerted efforts by the international community with respect to nuclear safety, nuclear waste management and accountancy, and physical protection of nuclear materials.

The declaration also listed steps for the management of fissile materials that are ‘no longer required for defence purposes’ as well as a Programme for Preventing and Combating Illicit Trafficking in Nuclear Materials (see Moscow Nuclear Safety . . . 1996; Programme for Preventing . . . 1996). This raised general awareness of the issue of ‘loose nukes’ and led to new ways and constellations for cooperation, both nationally and internationally.

The increased international awareness and growing willingness by states to work together also affected how specific assistance programmes were organized at the national level, and attempts were made to coordinate efforts among states that were willing to look beyond their own borders. The IAEA identified objects or facilities where improved security was called for, and then requested member-states to implement these improvements either alone or in cooperation with another member-state.

In the mid-1990s, the United States’ engagement gradually moved from the field of disarmament to also include nuclear materials that were not taken from dismantled nuclear warheads and nuclear materials at civilian facilities. More or less in parallel with the implementation of CTR activities by the Department of Defense (DOD), US national laboratories had become engaged in the ‘lab-to-lab’ programme under which US and Russian facilities work together to improve nuclear security at some highly sensitive Russian sites. Out of this grew the Material Protection, Control and Accountancy (MPCA) Program under the aegis of the US Department of Energy (DOE). In an effort to streamline the organization of the growing US programmes, the MPCA activities established in the DOD were merged with the MPCA programmes in the DOE (Wit and Woodcroft 2003: 229–30). The CTR programme has remained under the DOD. Other actors, including Norway, became engaged in 1995–96 and soon developed cooperative assistance programmes together with the United States and Sweden.

The European Union

By the late 1990s, the European Union had established itself as a major actor in the field of nuclear safety assistance to the FSU and Eastern Europe. However, in 1998 very harsh criticism was voiced of the EU’s TACIS programmes, and it was concluded that some USD 300 million had been more or less wasted on bad management, overpaid Western experts and feasibility studies that were irrelevant in FSU contexts. This led to a sharp reduction in assistance in the nuclear field. However, the Euratom Office of the European Commission became a
significant actor in developing cooperation, especially with the Russian nuclear regulatory office, Gosatomnadzor (as of June 2004 Rostekhnadzor).

This effort lasted only a few years, until a restructuring of the European Commission and the Euratom Office removed some of the independent status of Euratom (the European Atomic Energy Community, created in 1957 *inter alia* to administer the regional EU nuclear safeguards system), placing it more directly under the control of the European Commission’s Directorate General for Transport and Energy (DG TREN). However, despite the short-lived engagement of Euratom, it managed to boost the space and importance of the Russian regulator, which had previously enjoyed only a marginal place in the Russian nuclear system and was unable to fully use its regulatory powers vis-à-vis the all-powerful Minatom (now the Federal Agency for Atomic Energy, FAAE, or Rosatom).

The European Union also established a political platform for more thorough engagement in non-proliferation and in Russia, when a special Joint Action was decided by the EU Council of Ministers in 1999. This Joint Action, which has been renewed several times, remains a tool whereby which non-proliferation is given the attention of the European Union and its institutions as well as its member-states.

**Steps towards institutionalization**

Before 2001, a certain impasse began to develop. In monetary terms there was relatively little engagement by states other than the United States, and there was an absence of a common purpose and objectives. This was one reason why, in early 2001, the new Bush administration suggested a sharp budget cut – of one-third, from US$300 million per year to US$200 million – in the US nuclear non-proliferation programmes earmarked for Russia (Wit and Woodcroft 2003: 221). As the United States was then, and continues to be, the leader in this field, it seems reasonable to expect that reduced US spending and effort would have led other states to follow suit.

However, the events of 9/11 changed all that. Suddenly it was understood that unimaginable scenarios were thinkable, and that any actor, non-state or state, seeking attention for any reason could find it attractive to possess or use nuclear weapons, ‘dirty bombs’ or other weapons of mass destruction (WMD). Proliferation risks were now understood far more broadly as something that related not only to the ambitions of (some) states but also to terrorists.

One recent response was the US Global Threat Reduction Initiative (GTRI), presented in May 2004, aimed at assisting states in locating and securing all materials that are useable for WMD purposes. Before that, and even larger was the Canadian initiative to establish the Declaration on Global Partnership Against the Spread of Weapons and Materials of Mass Destruction at the G-8 Summit in Kananaskis, Canada, in June 2002. The Declaration established priorities for preventing the spread of WMD and the materials and technologies for their manufacture. The United States pledged US$10 billion and the other G-8 members another US$10 billion as well, to be invested in the field over a ten-year period.
Moreover, the European Union and thirteen states have since then communicated to the G-8 that they wish to join the Global Partnership and work for its purposes. Some of them have been actively involved with assistance programmes (for instance Norway, the European Union, Sweden, the Netherlands and Finland) whereas others are new to the field (for instance Poland, South Korea, Ireland, Switzerland, the Czech Republic, New Zealand, Australia, Belgium and Denmark). Since 2003 there has even been an expansion on the recipient side: after heated discussion among the G-8 states, Armenia, Kazakhstan, Georgia and Ukraine are accepted as adherents. The opposition to admitting more recipients came mainly from Russia, possibly because it would reduce the funding available for projects in Russia.

The Declaration on Global Partnership is one element in the overall strengthened effort to curb proliferation threats. Other initiatives have moved non-proliferation assistance and cooperation beyond the boundaries of the FSU. In May 2003, the United States launched the Proliferation Security Initiative (PSI), under which participants agree to carry out pre-emptive measures that may, for example, involve the interception and seizure of vessels carrying suspect materials.

At the level of the IAEA, its Board of Governors decided in March 2002 to establish the Nuclear Security Fund, to which member-states can make contributions for specific objectives, for the Agency to spend as deemed necessary. This has made the IAEA a much stronger and more active actor in the field of preventing proliferation rather than merely a coordinator of states’ assistance work.

In December 2003 the European Union established the EU Strategy Against Weapons of Mass Destruction, an action plan with a range of support measures for countries outside the Union. In April 2004 the UN Security Council passed Resolution 1540, admonishing states to control materials and technologies related to the manufacture of WMD. With this follows a national requirement to report to the Security Council regarding fulfilment of these requirements. Resolution 1540 also encourages UN member-states to ask for or grant assistance to other states in areas where this can help to make non-proliferation efficient.

The United States alone has spent about US$7 billion to US$8 billion on non-proliferation, and other donors have spent probably less than US$1 billion. There is still a long way to go before the pledges of the Declaration on Global Partnership are met – especially since the agenda and the number of eligible recipients continue to expand. It is estimated that in Russia about half of the materials and facilities have now had sufficient security upgrades (Bunn and Wier 2005).

Driving and shaping forces

International nuclear non-proliferation assistance is an extensive, dynamic activity involving thousands of people in tens of recipient and donor states. While it is difficult to gauge the weight of the forces that shape this cooperation, it is fair to say that a baseline is the national interests and specific competence in various
sub-fields. At the next stage, much will depend on the participating national organizations, authorities and individuals, how they develop ideas and see options and new areas in need of attention. All this has to fit into various kinds of institutional layers. And this can leave much or little room for competition among donors and recipients alike – as well as incentives for certain recipients to delay or speed up the implementation of security measures.

International nuclear non-proliferation assistance is more than a decade old, and the programmes are today wider and more diversified. Is there a pattern, or at least a set of driving mechanisms, that can help to explain this growth?

A basic condition for engagement in international non-proliferation assistance is that states and international organizations start their activities where they are competent and have an interest. This is hardly surprising. The United States has competence in nuclear-weapons manufacture and an interest in a well controlled and downsized Russian nuclear arsenal, as prescribed by the START I Treaty. Europe was affected by the Chernobyl accident, so nuclear safety received considerable attention in the EU member-states, which in turn made it natural for them to offer similar assistance to Russia, Lithuania, Ukraine and others.

States such as Finland and Sweden have a long tradition of supporting the development and strengthening of IAEA safeguards and promoting multilateral solutions to proliferation risks, so interest and expertise were put to use in the non-nuclear-weapon states (NNWS) of the FSU. Ever since the 1950s, Norway has been concerned about nuclear waste and fallout from installations on the neighbouring Russian Kola Peninsula which in the worst case would threaten the environment, the fishing industry and the socio-economic situation in this vulnerable Arctic area. Norway’s efforts have thus been focused on nuclear waste issues and environmental hazards in north-western Russia. Similarly, in recent years Canada has focused on nuclear hazards related to decommissioned nuclear submarines in north-western Russia, with explicit reference to the fact that Canada and Russia share Arctic shores and waters.

A second feature is that all actors, whether large or small, whether states or international organizations, seem to change their focus and expand the number of activities in which they are involved. In this respect, international non-proliferation assistance has led to the development of R&D of technologies in donor states and by international organizations in order to provide adequate support. Behind this growth lies the fact that engagement in one activity inevitably leads to related fields where security arrangements for nuclear materials are inadequate.

The positive effect is that states and international organizations that give or receive assistance have increasingly more contacts and common areas of interest, which in turn promotes a spread of knowledge. On the other hand, this can also create a disorganized network of interests, channels and goals without there necessarily being a common objective. Duplications as well as omissions may result.

With respect to the United States, its activities have shifted from a predominant focus on nuclear disarmament to non-proliferation in general and nuclear
counter-terrorism in particular. In terms of semantics, there seems be a drift away from using ‘non-proliferation’ as the point of reference and rationale to an emphasis on ‘nuclear security’. One explanation may be that ‘non-proliferation’ is more strongly associated with multilateral agreements such as the NPT and assuming obligations related to nuclear disarmament. ‘Nuclear security’ is easier to deal with, as it focuses more directly on the control of physical protection and materials, unrelated to nuclear disarmament measures.

The European Union’s activities are also changing direction, and in a radical manner. The initial EU focus, through the EU TACIS programme, was on nuclear safety and nuclear materials accountancy. Nuclear safety corresponded with the main concern of the people and states in Europe throughout the 1990s. Although the political dimensions of non-proliferation are an issue that is the prerogative of member-states, this is not the case with nuclear materials accountancy or safeguards. The 1957 Euratom Treaty gives the European Commission authority in this field, and this is a link to the activities under the aegis of TACIS. In recent years, however, the European Union has now deepened its collective engagement in international nuclear non-proliferation assistance. The Joint Action on assistance to Russia has broadened the field to include sectors and issues of security rather than safety as such.

Other states, among them Canada, Sweden, Norway, Japan, Finland and Germany, have been paying less attention to nuclear safety, moving gradually towards investing more in nuclear security. This is due to two factors. First, the bulk of the work on the improvement of safety at nuclear power plants (but not at research reactors) has been implemented; second, risks arising from inadequate physical security and control of nuclear materials are now perceived as the main concern.

International donor organizations, such as the IAEA and the EBRD, are also developing their instruments and not least their resolve. Initially, the EBRD focused mainly on nuclear safety, while the IAEA tried to function in a coordinating role with respect to the many non-proliferation activities that had to be implemented. At first this was successful, but states gradually came to ignore the admonishment to register and coordinate their assistance activities with the IAEA. With the establishment of the IAEA Nuclear Security Fund, much has changed in the past five years, and the Agency has become an important, leading actor – possibly also the only actor with an overview of the nuclear security issues in countries of concern. In this respect, the IAEA has established itself as an institution that works for progress in a methodologically and comprehensively sound manner.

The EBRD is also becoming a more independent or important actor, not least with its work in north-western Russia. The EBRD has developed a Strategic Master Plan with a detailed scheme and comprehensive approach to tackling both nuclear waste and security issues. Despite the large amounts of funding available and a reasonably clear mandate for activity, it has nevertheless been difficult to transform its noble intentions into impressive activities. The big breakthrough for the EBRD has yet to materialize.
What about the institutionalization and organization of international nuclear non-proliferation assistance across the many participating states and the many sub-fields and projects? In the broader picture, the United States and Russia have since the 1960s developed a strategic forum and dialogue that has proved useful in the context of CTR and MPCA activities. However, there are indications that the firm structure for exchanges between Russia and the United States has faltered somewhat since the Bush administration came to power in 2001 (Wit and Woodcroft 2003: 221). On the other hand, nuclear security issues occupy a prominent place in exchanges at meetings between Presidents Bush and Putin.

The European Union and other states have not had this strategic dialogue with Russia or with any other recipient states, although various other political channels have been opened due to international nuclear non-proliferation assistance. This shows an inverted set of circumstances: the US–Russian strategic fora and lines of communication paved the way for non-proliferation cooperation. For the EU member-states and a few of the states that give assistance to Russia, engagement in international nuclear non-proliferation assistance has contributed to giving nuclear security issues a permanent place on their agendas with Russia.

The most important multilateral forum – and one where all the above-mentioned strands of activity come together – is the G-8 and its Declaration on Global Partnership, by which the world’s informal leadership has focused attention on the entire issue of nuclear non-proliferation assistance. Each meeting discusses the objectives and priorities set by the G-8, and to some extent by the non-G-8 countries that adhere to the Declaration on Global Partnership. However, it should be noted that, aside from listing priorities in the Declaration on Global Partnership, little has so far been done to organize or coordinate its implementation. The G-8 has operated a Senior Officials Group and currently operates a Senior Group with three sub-committees. However, these fora focus mainly on obstacles to project implementation rather than coordination (Chuen 2004: 10–11).

Two tendencies might be pulling in opposite directions. First, the number of actors is expanding, as is the number of activities that actors find it worthwhile to engage in. On the other hand, the activities are steered mainly from the top, so they cannot direct events at the level of practical decision-making or project implementation. To the extent that activities are coordinated, this is largely due to the efforts of officials and decision-makers in the participating states.

A final element of what international nuclear non-proliferation is and can become is the bureaucratic interests in recipient and donor states and the competition for resources. Persons and organizations engaged in active work are often confronted with various types of obstacles to ‘sound and rational’ steps for achieving project implementation. There are many reasons for this: interpersonal strife and hierarchies, recipient facilities and organizations with legitimate security concerns, and an institutional incentive to protract the period of cooperation with a foreign partner. This may easily lead to a lack of transparency for donor
organizations. It increases the number of visits, exchanges, transfers, etc., and, at certain levels of implementation, may be of personal and organizational gain to donors and recipients alike.

There is also an element of competition among donors. Certain facilities and activities are prestigious and naturally attract donor assistance. It ‘counts more’ to dismantle a nuclear-powered submarine than to conduct a training course on how to guard a lighthouse driven by strontium batteries, to put it frankly. When there is little or no coordination or exchange of information among donors, they are likely to compete for objects and projects. In this way, resources are wasted.

However, the recipient organizations and countries are in a sort of competition, and here the paradox often arises that an entity that has received various kinds of assistance will learn how to communicate its subsequent needs better than other entities. On the other hand, if a facility in one country shows that it is reluctant to engage in cooperation with an external actor, the external actor will most likely indicate that it will help another country or facility in need of assistance. This signalling effect and its ability to create competition among recipients – whether states, facilities or organizations – probably also helps reduce the risk that a recipient will want to protract and delay developments.

**Treaty-based versus ad hoc non-proliferation measures**

International nuclear non-proliferation assistance is qualitatively and quantitatively different from the formal non-proliferation arrangement of the NPT regime.

The NPT is a multilateral treaty with such formal institutions as five-year Review Conferences, depositary governments for administration of ratifications, and the IAEA for implementation of the safeguards obligations in Article III of the treaty. For non-proliferation assistance, the arrangement consists of bilateral agreements and certain loose institutional arrangements with, or without, reference to the NPT. However, common to both contexts is that the parties are states as the initiating and guaranteeing powers.

The relations or relationships among the participating states in the two spheres differ. In the NPT framework, states are in principle equal, but are formally divided into the nuclear-weapon states (NWS) and the non-nuclear-weapon states (NNWS) and informally into parties that are eligible to receive assistance for the development of civilian nuclear applications and states that are obliged to render this assistance. In the non-proliferation assistance context, the relationship involves a recipient and a donor, with all the formal and informal inequality that that creates between them. However, technical expertise, size and many other factors also influence the relationship between two parties in an assistance partnership.

When it comes to the specific actors involved, there are some commonalities but also differences. In the NPT framework there are state representatives, diplomats and representatives. In the ad hoc sphere the same actors are present – as well as many others, such as representatives from individual facilities, NGOs
and business corporations. The means by which operations take place are diplomatic and reciprocal in the NPT framework, but non-proliferation assistance is conducted both by diplomatic means and with contracts and financial mechanisms. As regards the time frame for international non-proliferation assistance, 2012 is the current deadline for when the efforts of the Declaration on Global Partnership are to be implemented (although it is probably a safe guess that by then new issues and problems will have emerged, calling for assistance after that date). In the case of the NPT regime, in 1995 it was decided that the treaty would be in force for an indefinite period, with no cessation date.

The focus of the NPT is in principle a balance between verified nuclear non-proliferation and disarmament. On the other hand, activity related to international non-proliferation assistance is ‘less moral and just’ in the sense that the focus has been less on disarmament issues and more on various forms of control of physical protection and materials control. The NPT has a global outreach, whereas international non-proliferation assistance is regional, currently focused on the FSU.

Finally, what do the two frameworks offer for stockpile security? The NPT has established an obligation for its parties to control their nuclear materials. With respect to the NNWS, this involves international inspections and safeguards implemented by the IAEA. Nuclear materials in the NWS are not subject to such extra control. In the realm of international nuclear non-proliferation assistance, on the other hand, any and all nuclear material is eligible for protection, irrespective of whether it is in an NWS or an NNWS. The focus is not primarily on materials accountancy but rather on physical protection.

**Conclusion**

International nuclear non-proliferation assistance has become an expression of good intentions, cooperative spirit and common interests that cross the former Cold War divide. Indeed, the assistance shows that there is a preparedness by the former antagonists to recognize their responsibility across borders for the Cold War nuclear legacy. However, while the assistance activities and the processes and modalities associated with the Non-proliferation Treaty are related, they also differ.

For sound and sustainable practices and priorities, it is important to consider whether there are synergies to be achieved between the two realms.

In terms of what the NPT can do for international nuclear non-proliferation assistance, there are three main issues. First, the disarmament commitment on the part of the NWS is obliging, and it reduces the tendency to see nuclear security problems as caused by states that are small and less advanced in their development of nuclear technologies. The correct order is one where it is understood that the largest amounts of materials and much of the drive towards nuclear proliferation is actually caused by the NWS – either because they have large amounts of nuclear materials or because their example and prevailing nuclear doctrines motivate other states to pursue a nuclear-weapon ambition. Finally, the
NPT serves as a reminder that international nuclear non-proliferation involves more than physical protection: it should also include nuclear materials accounting, international safeguards and the integration of states in the NPT and IAEA systems for cooperation and verification.

International nuclear non-proliferation assistance can also play a role for the NPT and the global non-proliferation regime. Here the record is more mixed, however. One important contribution is that ad hoc measures can offer quick fixes. Early cooperation with several states of the FSU served to establish routines and knowledge that made it easier for them to sign and ratify the NPT as well as implement IAEA safeguards. Second, international nuclear non-proliferation assistance can offer support in areas that are relevant for the NPT regime but where the treaty’s coverage is less pronounced. This concerns for instance physical protection, export controls and, ironically, also safeguards related to a future cut-off of fissile materials production. Washington has officially declared that an international fissile materials cut-off treaty would not be verifiable. Nevertheless, there are control mechanisms in place on the remaining plutonium-producing reactors in Russia that the United States and Russia have agreed to shut down. This inconsistency in US declaratory policies and practical work merits further scrutiny and debate.

There are two interrelated negative influences that international non-proliferation assistance may have on the formal non-proliferation regime. First, the tendency is to refer increasingly to nuclear security rather than nuclear non-proliferation. It is difficult to quantify the effect of this semantic shift, but there can be little doubt that nuclear ‘security’ is a more straightforward term, involving fewer embedded issues of reciprocity, multilateral obligations and the like. This may be a consequence of the interest of primarily the United States and Russia in downplaying the nuclear disarmament dimension that is implicitly there when ‘non-proliferation’ is discussed.

Second, international nuclear non-proliferation assistance has gradually but persistently moved away from nuclear disarmament as an area of operation. The main actors seem to be less interested in working together to destroy nuclear weapons. Strategic flexibility and parity in both strategic and tactical nuclear weapons have replaced the ambitious disarmament plans of the 1990s that foresaw the ratification of both a START II Treaty and the negotiation of a START III Treaty.

In addition to abandoning their nuclear disarmament aspirations, Russia and the United States have gone further and embarked on the path of making their nuclear warheads and delivery systems even more sophisticated. Many of the official reasons given for making these improvements refer to the threat of global terrorism, even though such threats can clearly not be overcome by means of nuclear weapons. Thus the United States and Russia have at best a shared understanding that nuclear disarmament is the wrong policy to pursue (Felgenhauer 2006). At worst, they have a nuclear arms race of undefined size and shape in the making.

Either way, implicit and explicit risks are involved. If it becomes a prevailing
perception that Russia receives funding for nuclear non-proliferation while at the same time it continues to improve its nuclear arsenal, this may backfire. Audiences in various donor states may see the link and conclude that Russia can afford nuclear-weapons development partly because others are paying for the nuclear clean-up and non-proliferation measures on its territory.

If this happens, much will be lost in the collaboration between states that now share a common dedication. This makes an additional case for strengthening nuclear disarmament efforts in accordance with the obligations under Article VI of the NPT. In the context of nuclear non-proliferation assistance, nuclear disarmament must be put back on the agenda. If successful disarmament steps are in place, it will be possible to convey to the public that there is, after all, a way forward towards reducing the threats posed by nuclear weapons and materials.

If, however, the perception prevails that the nuclear complexes and arsenals remain in place and are undiminished in strength, then loss of faith in international nuclear non-proliferation assistance across borders may ensue.

Notes
This text draws in particular on van Dassen and Mærli 2005 and Managing Nuclear Stockpiles 2005, both from the NUPI Conference ‘Managing Nuclear Stockpiles in the Twenty-first Century’, 3–4 March 2005; see also Mærli 2005. Much of the information presented here is based on personal experience and observations from my professional work. This chapter has benefited greatly from critical views and suggestions from Rose Goettemoeller, Director of the Carnegie Endowment Moscow Centre; and Elena Sokova, Director of the Newly Independent States Nonproliferation Program, Center for Nonproliferation Studies, Monterey Institute of International Studies.


2 Based on an overview by the Center for Nonproliferation Studies, Monterey Institute of International Studies, and on Einhorn and Flournoy 2003.

3 Three examples can be mentioned; the NTI, established by the owner of CNN, Ted Turner, the Green Cross International and Bellona.

4 Information on the ISTC may be found in the NTI/Monterey database: www.nti.org/db/nisprofs/russia/orasst/otherusg/istc.htm.


7 The IAEA started to collect information on nuclear trafficking in 1993. In 1995, the Illicit Trafficking Database (ITDB) became operational following a decision of the IAEA Board of Governors.

8 See van Dassen and Wetter (2006) for a presentation of the priorities and shaping forces behind the nuclear non-proliferation policies of the Nordic countries.
To mention one recent example: there are indications that Russia is now deploying tactical nuclear missiles on its submarines and vessels in contrast to earlier one-sided statements and confidence-building measures made by both the Soviet Union and the United States in 1991; statements that were reiterated in 1992 by Russian and US presidents. If the allegations are true, it is not only a problem that Russia has undertaken these steps. It is also a problem that the United States does not seem to be bothered and finds it relevant to protests.
Since the very beginning of the Nuclear Age, more than six decades ago, the world has grappled with the dual challenges of preventing the misuse of nuclear energy for developing nuclear weapons while at the same time promoting the peaceful uses of the atom. A cloud has hung over the peaceful uses of nuclear energy, resulting in multiple layers of controls on the trade in nuclear items. Nonetheless, some 440 nuclear power plants continue to provide more than 16 per cent of the world’s electricity, 156 states have safeguards agreements in force with the IAEA, and more than 140,000 significant quantities of nuclear material have been placed under IAEA safeguards.

Moreover, the civilian nuclear industry appears poised for worldwide expansion. The rapidly growing global demand for electricity, uncertainties about the supply and price of natural gas, soaring prices for oil, concerns about air pollution and the immense challenge of lowering greenhouse gas emissions – all these are forcing a fresh look at nuclear power. As the technical and organizational foundations of nuclear safety improve, there is increasing confidence in the safety of nuclear power plants. In light of the existing, new and reawakened interest in many regions of the world, the prospect of new nuclear power stations on a large scale is therefore real. More and more states seek to add nuclear power to their energy mix, to reduce their reliance on fossil fuels and in the future to meet their Kyoto Protocol emission reduction quotas. And, more and more states will consider developing their own fuel-cycle facilities and nuclear know-how, and will seek assurances of supply in materials, services and technologies.

Duality of nuclear energy

The dual nature of nuclear energy, however, has been the source of fundamental political, legal and technological challenges. Despite the destructive military potential of nuclear energy, when civilian atomic power was spun off from military programmes no serious attempt was made to develop proliferation-resistant nuclear technologies. The same technologies and facilities that were used to produce nuclear material for nuclear weapons were designated to produce nuclear fuel for civilian nuclear reactors. The three states participating in the
Manhattan Project to develop the atomic bomb during the Second World War – the United States, with Canada and the United Kingdom – emerged as the leaders in the industrial development of nuclear energy.

Canada became the first country to renounce nuclear weapons, while the two other partners went on to develop nuclear-weapon arsenals – an endeavour later paralleled by the Soviet Union, France and China. The resulting Cold War legacy of thousands of nuclear weapons and hundreds of tonnes of weapon-usable high-enriched uranium and separated plutonium continues to haunt the world, posing an existential threat to all humanity. It is in the shadow of the nuclear detritus of the Cold War that both old and new challenges face our world in the twenty-first century.

The decades-long nuclear non-proliferation effort is under threat: from stagnation in nuclear disarmament, from regional arms races, actions by a few non-nuclear-weapon states (NNWS) found to be in non-compliance with their NPT safeguards obligations, from the incomplete manner in which export controls required by the NPT have been applied, from well organized illicit nuclear supply networks operating internationally, and from the increasing risk that terrorist and other non-state entities may acquire nuclear or other radioactive materials.

This chapter assesses the dual nature of nuclear energy, with the challenges and opportunities facing the existing nuclear non-proliferation regime. It reviews briefly the present nuclear export control system and its challenges and failures resulting from clandestine nuclear supply networks; recommends the negotiation of a formalized multilateral treaty-based nuclear export control arrangement that can provide assurances of non-proliferation and of supply, and in this context discusses proliferation resistance and multilateral approaches to the nuclear fuel cycle. In the twenty-first century, efforts to halt further nuclear proliferation must be inclusive, innovative and non-discriminatory. This chapter assesses the weaknesses of the current system, provides recommendations on strengthening the non-proliferation system and concludes with a recommendation for a multi-faceted approach combining controls and multinational approaches that could prevent future emergence of ‘red zones’ (Carter and Lamontagne 2006) – the further spread of proliferation-sensitive technologies and capabilities – while ensuring access to the benefits of peaceful uses of nuclear energy.

**Emergence of the nuclear non-proliferation regime**

It was the declassification of nuclear information in 1955 at the first UN Conference on the Peaceful Uses of Atomic Energy that opened the way for the civilian nuclear industry. Canada and Sweden followed the United States, United Kingdom, Soviet Union and France in developing nuclear reactor prototypes. A decade later, in 1964, there was fifteen reactors in operation or completed, burning either enriched or natural uranium (Goldschmidt 1980). In parallel, a market emerged in nuclear technologies, reactors and fuels in which the United States, because of its monopoly control of uranium enrichment supplies, insisted
on inspections to verify that nuclear material was not being diverted to foreign countries for non-peaceful uses. This practice of verification was gradually adopted by other states using nuclear technologies and materials, thus leading to the emergence of a non-proliferation regime – with the International Atomic Energy Agency as one of its primary custodians.

**Early regime**

This non-proliferation regime had a range of antecedents: the Franck Report of 1945\(^3\) that called for an international treaty prohibiting nuclear weapons and setting up nuclear energy controls; followed by the 1945 Agreed Declaration on Nuclear Energy by Canada, the United Kingdom and the United States, that emphasized a policy of secrecy but also included a proposal for international control of all nuclear activities (see Rainer and Szasz 1970); the creation in January 1946 of the UN Atomic Energy Commission on the development of nuclear energy and the abolition of nuclear weapons; the March 1946 Acheson–Lilienthal Report\(^4\) proposing a comprehensive nuclear non-proliferation and control regime in the form of a supranational body under which the United States would renounce its nuclear monopoly; the June 1946 Baruch Plan that called for the establishment of an International Atomic Development Authority (IADA) vested with managerial control of dangerous nuclear activities;\(^5\) the McMahon Act of 1946 banning the sharing of any nuclear knowledge, technology and materials; the December 1953 Atoms for Peace plan promoting peaceful uses of nuclear energy under verification by an International Atomic Energy Agency; the amended 1954 Atomic Energy Act of the United States that opened the way for nuclear cooperation agreements and transfers of civilian nuclear technology and materials, in turn leading to peaceful nuclear programmes in many countries; and the 1955 Geneva Conference on the Peaceful Uses of Nuclear Energy.

In 1957 came the establishment of the International Atomic Energy Agency, with the dual mandate of promoting peaceful uses of nuclear energy and verification through a safeguards system, including the possibility of nuclear fuel storage and supply. However, the Agency was denied any role in verification of nuclear disarmament – a glaring weakness in hindsight. The year 1957 also saw the creation of the European Atomic Energy Community (Euratom), which set up a supply agency and community ownership of special fissionable material; then came the gradual transfer of bilateral safeguards to the IAEA; and the signing of the Treaty on the Non-proliferation of Nuclear Weapons (NPT) in 1968, with its entry into force in 1970, although two nuclear-weapon states (China and France) did not accede to the treaty until 1992.

As discussed later in this chapter, in 1971 the Zangger Committee was established to define the items whose export triggered safeguards under Article III.2 of the NPT. This was followed in 1975 by the Nuclear Suppliers Group (NSG), which included certain NPT states but also then non-NPT states (France and Japan), and devised supply guidelines covering nuclear and dual-use items.
Current challenges and opportunities

Over time the NPT acquired near-universal status. Membership in the Zangger Committee and the NSG increased to include nuclear supplier and transshipment states, all the while the NPT remained under stress due to concerns over nuclear activities in certain non-nuclear-weapon states, non-NPT states and in the nuclear-weapon states as well. In a landmark article published in autumn 2003, IAEA Director General Mohamed ElBaradei cited the shortcomings of the existing nuclear non-proliferation regime and proposed certain strengthening measures (ElBaradei 2003):

Controlling access to nuclear-weapon technology has grown increasingly difficult. The technical barriers to designing weapons and to mastering the processing steps have eroded with time. Much of the hardware in question is ‘dual-use’; for example, it is hard to justify restrictions on exporting ‘hot cell’ technology that could be used for plutonium separation when the same equipment is vital for producing radioisotopes used in modern medicine.

ElBaradei’s proposal had three parts:

First, it is time to limit the processing of weapon-usable material (separated plutonium and high-enriched uranium) in civilian nuclear programmes, as well as the production of new material through reprocessing and enrichment, by agreeing to restrict these operations exclusively to facilities under multinational control. These limitations would need to be accompanied by proper rules of transparency and, above all, by an assurance that legitimate would-be users could get their supplies.

Second, nuclear-energy systems should be deployed that, by design, avoid the use of materials that may be applied directly to making nuclear weapons. These systems should have built-in features that would prevent countries diverting material to weapons production; prevent the misuse of the facilities and equipment for clandestine manufacture of such materials; and facilitate efficient oversight to ensure continued peaceful use. This is not a futuristic dream; much of the technology for proliferation-resistant nuclear-energy systems has already been developed or is actively being researched. In addition, existing facilities around the world that use high-enriched uranium applications – for example, to produce medical radioisotopes – should continue, gradually but irreversibly, to be converted to low-enriched processes.

Third, we should consider multinational approaches to the management and disposal of spent fuel and radioactive waste. More than fifty countries have spent fuel stored in temporary sites, awaiting reprocessing or disposal. Not all countries have the right geology to store waste underground and, for many countries with small nuclear programmes for electricity generation or for research, the costs of such a facility are prohibitive.

(ElBaradei 2003)
This call for strengthened fuel-cycle controls and assurances of supply of civilian nuclear technology and fuel was picked up by the UN Secretary General’s High Level Panel on Threats, Challenges and Change which urged negotiations without delay on an arrangement, under the IAEA Statute, for the Agency to serve as a guarantor of two fuel-cycle-related services: the supply of fissile material for fuel and the reprocessing of spent fuel. The assurance of supply – the guaranteed provision of reactor technology and nuclear fuel to users that satisfy agreed non-proliferation requirements – is clearly a prerequisite for getting any additional controls on the fuel cycle accepted (UN Secretary General’s High Level Panel 2004).

The High Level Panel also urged that, while this arrangement is being negotiated, a voluntary time-limited moratorium on new fuel-cycle facilities should be put in place – a proposal the IAEA Director General also made at the 2005 NPT Review Conference. Such a moratorium would signal the willingness of the international community to address this vulnerability in the regime. It would also provide an opportunity for analysis and dialogue among all parties.

Earlier, in February 2004, US President George W. Bush had called on the NSG to refuse to sell enrichment and reprocessing equipment and technologies to any state that did not already possess full-scale, functioning enrichment and reprocessing plants. He noted that this step would prevent new states from developing the means to produce fissile material for nuclear bombs (White House Press Office 2004).

In his 2005 report, In Larger Freedom: Towards Development, Security and Human Rights for All, UN Secretary General Kofi Annan noted that the access of non-nuclear-weapon states to the benefits of nuclear technology should not be curtailed, and incentives should be created for states to voluntarily forgo the development of domestic uranium enrichment and plutonium separation capacities, while guaranteeing their supply of the fuel necessary to develop peaceful uses, with the option of an arrangement in which the IAEA would act as guarantor for the supply (Annan 2005: para. 100).


In fact, the idea of a multilateral approach to the fuel cycle is not new. Soon after the Nuclear Age began, the United States unsuccessfully advanced a proposal for multinational control of the nuclear fuel cycle: the 1946 Baruch Plan that called for states to transfer ownership and control over civil nuclear activities and materials to an international development agency. In 1953, President Dwight D. Eisenhower unveiled his Atoms for Peace plan, which laid the groundwork for the establishment of the International Atomic Energy Agency. The real heyday of such explorations came in the second half of the 1970s and the early 1980s. After India conducted a ‘peaceful’ nuclear test in
1974, concern grew that other countries could follow India’s example and use their civilian nuclear programme and plutonium reprocessing technologies to build nuclear weapons. Yet at the same time, countries wished to solve this problem within the context of the new NPT, which sought to assure all states that they would be permitted to use nuclear energy for peaceful purposes under IAEA safeguards.

Out of such concerns a Regional Nuclear Fuel Cycle Centres (RFCC) study of 1975–77 provided a forum for countries to examine the possibility of joining together to set up fuel-cycle centres at selected sites. The International Nuclear Fuel Cycle Evaluation (INFCE) study of 1977–80 touched upon the possibility of regional fuel-cycle facilities and prospects for multilateral cooperation on plutonium storage. However – due in large part to diminishing concern over the likelihood of a ‘plutonium economy’, the disinclination of some countries to give up national control over reprocessing, and the general lack of political will – neither the RFCC or INFCE studies resulted in any further pursuit of multilateral approaches.

The IAEA Expert Group on International Plutonium Storage (IPS), 1977–80, moved away from the discussion of regional fuel-cycle centres to examine instead the prospects for IAEA-supervised management, storage and disposition of spent nuclear fuel. Once again, no consensus was reached, as states were unwilling to renounce sovereign control over nuclear technology and fuel. The same fate met the studies undertaken by the IAEA Committee on Assurances of Supply (CAS) in 1980. After seven years, twenty-one sessions, and little or no agreement among the participants, CAS went into formal abeyance, where it has remained.

The efforts that began in the 1970s in the area of multilateral approaches finally ended with the UN Conference for the Promotion of International Cooperation in the Peaceful Uses of Nuclear Energy (all known under the rather unwieldy acronym UNCPICPUNE) in 1987. Like its predecessors, it too yielded little in the way of concrete results.

Thus the world has come full circle. There is growing recognition that the traditional strategies based on denials and controls need to be updated, and that consideration should be given to new approaches like multinational control of sensitive parts of nuclear fuel, proliferation resistance and assurances of supply to legitimate users, if we are to prevent the rise of clandestine nuclear supply networks.

The role of clandestine nuclear supply networks

Clandestine nuclear supply networks (referred to by some as the ‘nuclear black market’) have been described as providers of nuclear technology or material from one party to another. These networks exist on both the supply side and on the demand side.

Perhaps the most disturbing lesson to emerge from the cases of Iran and Libya is the existence of extensive clandestine nuclear supply networks that
clearly thrived on demand. The relative ease with which Dr Abdul Qadeer Khan and his international associates were able to set up and operate multinationally clearly demonstrates the inadequacy of the current, cartel-based, export control system (Langewiesche 2005, 2006). Nuclear components designed in one country could be manufactured in another, shipped through a third (which may have appeared to be a legitimate user), assembled in a fourth and designated for eventual use in a fifth country (see Braun and Chyba 2004; Jahn 2004).

It is both disturbing and instructive that the extensive international clandestine nuclear supply networks involving not only Dr A.Q. Khan but also apparently many others in Europe, Asia, Africa and the Americas managed to operate for decades in more than thirty countries. The existing international nuclear export control regimes simply failed to recognize, expose or stop the networks’ operations (Sanger 2004a; Blackford 2004; CNN.Com 2006; Charbonneau 2006).

Khan and his international associates, with the assistance of other principals and partners on five continents, managed to trade in key nuclear technologies for more than two decades, all the while successfully eluding the world’s intelligence agencies and non-proliferation institutions and organizations. Despite many hints and leads, throughout the 1980s and 1990s nuclear supplier states and their control mechanisms failed to thwart the operations of these networks as they provided nuclear equipment and expertise that could be used both for civilian and military applications, to countries including the DPRK, Iran, Iraq and Libya (Albright and Hinderstein 2005).

It is important to discover and expose the full extent of such networks so that their operations can be terminated at a minimum, and the perpetrators prosecuted at a maximum. Furthermore, a full understanding of the ways and means by which the networks and buyers/recipients identified, ordered, manufactured, shipped, bought and sold nuclear know-how, equipment and technology would be vital for assessing the fundamental flaws in current systems of nuclear export control mechanisms (Albright and Hinderstein 2004). However, it is possible that the full extent and range of the clandestine supply networks may never be known – the network of networks may well have morphed or dispersed into smaller and smaller supply chains or rings capable of operating independently.

Even today, the literature and analysis have still not fully comprehended or come to terms with the facts – that, as far as is known, the current nuclear supply networks, a giant nuclear Wal-Mart, have involved individuals and entities from more than thirty countries – but apparently not from Russia. It seems that greed and ideology drove such parties to complicity, rather than the hardships suffered by the former Soviet scientists. It is surprising that in the mounds of literature on this subject and threats, none has focused on similar incentives and opportunities for scientists in rich, developed states. Little has been written about the clandestine nuclear networks that had supplied pre-1991 Iraq, as well as other states interested in acquiring nuclear and nuclear weapon-related items.
Current nuclear export controls

The existing multilateral nuclear export control regime includes the multilaterally negotiated NPT; the Zangger Committee, established in 1971 to reach a common understanding of the NPT export control provisions contained in Article III.2 of the NPT; the Nuclear Suppliers Group (NSG), created in 1975 by certain states in the aftermath of India’s ‘peaceful nuclear explosion’ in 1974; the IAEA Additional Protocol (AP) negotiated by IAEA member-states; and, most recently, UN Security Council Resolution 1540, adopted in April 2004 to prevent access to WMD materials and technologies by non-state actors.

The NPT is a negotiated multilateral treaty, as is the IAEA Additional Protocol. By contrast, the Zangger Committee trigger list and the NSG guidelines do not enjoy that same status, recognition or legitimacy – as these lists and guidelines have been drafted and implemented by self-appointed groups of states, and lack adequate transparency. On the other hand, the Zangger Committee is commonly referred to as the ‘faithful interpreter’ (Schmidt n.d.) of the NPT export control requirement, and thus enjoys a modicum of legitimacy not available to the NSG.

Establishing effective international export control regimes to slow and prevent the transfer of sensitive technology and weapons systems faces several challenges:

- First, much of the sensitive technology trade to be controlled is dual-use, requiring complicated risk assessment as to whether the technology will be used for peaceful purposes or diverted to a weapon programme.
- Second, the number of international exporters of sensitive dual-use technologies is growing and trends of globalization may mean that companies in one country are financing sensitive dual-use technologies designed in another country, and assembled in a third, for use in a fourth or fifth country.
- Third, the ubiquity of such technologies in a global economy makes it difficult to maintain sovereignty over the technology.
- Fourth, competition among international technology suppliers also makes policy coordination difficult.
- Non-state actors as providers and possible middle and end-users of technology.
- Finally, new risks of terrorism call for stricter enforcement of export controls, as well as efforts to interdict illicit trafficking.

The international export control regimes suffer from various shortcomings related to the arrangements themselves, the environment within which they operate and the national policies of subscribing states. The greatest problem lies in the lack of consensus among regime members concerning proliferation threats. While some agreement exists, consensus breaks down beyond the most obvious cases.
With this lack of consensus among supplier states, existing informal structures of the multilateral export control regimes become problematic. Because the regimes are agreements or arrangements whereby member-states implement regulations and license sensitive items on the basis of ‘national discretion’, licensing decisions are frequently inconsistent, or may provoke criticism from other members.

Zangger Committee

According to the late Fritz Schmidt, Chairman of the Zangger Committee:

The basis of the export control regime is the Nuclear Non-proliferation Treaty (NPT). To define the current export control standards, one has to refer to the provisions of the NPT but at the same time also to the NPT Review Conferences, in which the sovereign [bodies] of the NPT, the states parties, have been expressing their understanding of the provisions of the Treaty. Export controls can – and do – play an important role in fostering this universality goal by demanding the implementation of internationally agreed security standards in recipient countries before export licenses are granted.  

(Schmidt 2005)

In theory, an export control system allows a choice to be made whether or not to allow an export to take place (see also Institute for Science and International Security 2003). Thus, in theory, an export control system does not automatically equate with an embargo. The fact that data are gathered on exports and that permission is required before certain items can be exported does not necessarily imply that governments are attempting to deny any specific item to any specific end-user (NPT Briefing Book 2004). However, that is the theory – not the practice in the real world, where the prevalent model of export controls is the one created in the early days of the Cold War and refined over time, with the purpose of denying transfers and access to know-how and technology to target states. The sooner we recognize this reality and can come to terms with it the sooner we will be able to devote energies to reforming, legitimizing and multilateralizing access to civilian nuclear items under international verification, as envisaged under the NPT, while at the same time preventing their diversion or misuse for developing nuclear weapons.

Nuclear Suppliers Group

The Zangger understandings establish three conditions for supply: a non-nuclear-explosive assurance; a requirement for IAEA safeguards; and a re-transfer obligation that requires the receiving state to apply the same conditions when re-exporting the items. In contrast to Zangger Committee members, NSG members are not required to be parties to the NPT, but they all must adhere to instruments that contain equally binding commitments. The NSG Guidelines are designed to strengthen implementation of the non-proliferation undertakings
contained in the NPT and its IAEA safeguards agreements, and to ensure that transfers are not diverted to unsafeguarded nuclear fuel-cycle or nuclear explo-
sive activities.

The NSG and the Zangger Committee differ in the scope of their trigger lists of especially designed or prepared items (EDP) and in the export conditions for items on those lists. As an export condition for the items on the trigger lists, the NSG has a formal full-scope safeguards requirement as a condition of supply. However, all members of the NSG and the Zangger Committee apply full-scope safeguards as a condition for supplying trigger-list items to NNWS. The NPT Review Conferences in 1995 and 2000 recognized the role of the Zangger Committee and affirmed that ‘new supply arrangements should require as a necessary precondition’ a commit-
ment not to acquire nuclear explosives and acceptance of full-scope safeguards.7

The NSG arrangement covering exports of dual-use items is a major dif-
fERENCE between the NSG and the Zangger Committee. As dual-use items cannot be defined as EDP equipment, they fall outside the mandate of the Zangger Committee. In the view of the NSG, the control of dual-use items has been recognized as making an important contribution to nuclear non-proliferation – however, detractors regard such controls as a further denial or restriction of access to technology.

The NSG Guidelines apply to transfers to all NNWS. The Zangger Commit-
tee memoranda apply only to transfers to NNWS not party to the NPT, as com-
pliance with NPT obligations fulfils the criteria of the Zangger Committee understandings. In 1994, the NSG also strengthened its re-transfer provisions to require government-to-government assurances to support the stipulation that supplier consent be obtained for the re-transfer of trigger list items from any state that does not require full-scope safeguards as a condition of supply. At the same time, the NSG also adopted the ‘non-proliferation principle’ – sometimes called the ‘Iran clause’ – whereby a supplier, notwithstanding other provisions in the Guidelines, shall authorize a transfer only when satisfied that the transfer will not contribute to the proliferation of nuclear weapons. According to the NSG, the non-proliferation principle seeks to cover those rare but important cases where adherence to the NPT or to an NWFZ treaty may not in itself be a guarantee that a state will consistently share the objectives of the treaty or that it will remain in compliance with its treaty obligations.

Recent developments in the Nuclear Suppliers Group

In June 2005, members of the NSG met in Oslo for their fifteenth plenary to discuss ways to strengthen the global nuclear non-proliferation regime. NSG members agreed on the adoption of three measures intended to strengthen each country’s national export controls (NSG 2005):

- Establishment of a procedure to halt ‘nuclear transfers to countries that are non-compliant with their International Atomic Energy Agency (IAEA) safe-
guards agreements’.
• Development of fall-back safeguards if the IAEA cannot carry out its safeguard mandate in a recipient state.
• Making the existence of effective export controls in recipient states ‘a criterion of supply for nuclear material, equipment, and technology and a factor for consideration for dual use items and technologies’.

Two additional measures intended to stem the proliferation of nuclear technology were not adopted but remain under consideration. These are:

• Requiring recipient countries to adopt an Additional Protocol to their basic safeguards agreement with the IAEA, an agreement that gives the IAEA a broader inspection mandate, as a condition of supply.
• Further strengthening NSG Guidelines with respect to enrichment and reprocessing technologies.

The sixteenth plenary meeting of the NSG held in Brasilia on 1–2 June 2006 decided to adopt, *inter alia*, the following measures (NSG 2006):

• Revised guidelines for information sharing within the NSG.
• An approach to continue the Additional Protocol (AP) discussions in the Consultative Group (with a view to regarding the AP as the verification standard and a condition of supply).
• An amendment to the Part 1 Guidelines to include especially designed or prepared valves for use in enrichment plants.

It is expected that the NSG will develop further restrictions governing transfers of nuclear fuel-cycle-related equipment and technology, in particular for uranium enrichment. Apparently, under one approach the new restrictions would limit uranium enrichment and plutonium separation technologies to states that currently operate fully operational and fully functional enrichment and reprocessing facilities. The other approach would rely on ‘objective’ non-proliferation criteria to be met by a potential recipient in order to be eligible for exports of such sensitive technology. The effect of the first approach would be to freeze out states like Australia, Brazil, Canada, Iran and South Korea (among others) that do not currently operate such technologies but might decide to do so in the future. Any such development is likely to have deleterious effects on attempts to develop mechanisms for assurances of supply or multilateral approaches to the nuclear fuel cycle. The latter, criteria-based, approach holds greater promise.

**G-8**

Since 1984, the G-8 partners have voluntarily agreed on restraint on exports of enrichment and reprocessing related technologies, as reflected in the statements of the 2004 Sea Island and the 2005 Gleneagles G-8 summits. In the lead-up to the 2006 G-8 summit in St Petersburg, this simmering dispute came to a head
when some of the Western states sought an end to a de facto ban on transfers of nuclear fuel technology to countries interested in uranium enrichment for nuclear power production. The de facto moratorium on fuel-cycle technology coincided with the Western effort to pressure Iran to suspend its enrichment-related activities and the effort to devise a mechanism for reliable access to enriched uranium involving France, Germany, the Netherlands, the Russian Federation, the United Kingdom and the United States. Both these efforts are increasingly seen as discriminatory by a broad range of countries, and it was made known publicly that the 2006 G-8 summit would be the last time there would be agreement to continue the moratorium. Reportedly, Australia, Canada and Japan were pushing to reverse the de facto ban (Charbonneau and Heinrich 2006).

The St Petersburg summit Statement on Non-proliferation noted:

We agreed at Sea Island the export of such items should occur only pursuant to criteria consistent with global non-proliferation norms and to those states rigorously committed to these norms. Over the last two years we have made significant progress in the development of such criteria. We welcome the progress noted by the Nuclear Suppliers Group and its commitment to work actively with a view to reaching consensus on this issue by 2007.

(G-8 2006b)

This is indicative of a continuing feud over the issue and of the inability to reach consensus on a ‘criteria-based approach’, the details of which remain undefined but are believed to include full compliance with IAEA safeguards and demonstrated need to produce nuclear fuel indigenously. The virtual monopoly of a small number of states with commercial enrichment facilities does not stand well with a number of key states. It was reported by the media that some countries are insisting on developing such criteria, which, if met by a country, would allow access to fuel-cycle technology (Charbonneau and Heinrich 2006).

Future of the Zangger Committee

With the passing away of Dr Fritz Schmidt in January 2005, the chair of the Zangger Committee currently stands vacant. There are (ill advised) moves afoot to fold the Zangger Committee into the NSG – such notions were originally aired in the mid-1990s. The case for the continuation of the Zangger Committee is unassailable:

- It derives its existence directly from the NPT (not just from Article III.2).
- It is accepted and recognized by all NPT member-states of the NPT.
- There is still flexibility for further elaborations within Article III.2 itself.
- Therefore the Zangger Committee should continue to do what it was created for and what it does best – to provide a forum for interpreting supplier commitments under Article III.2.
The NSG does not and cannot fulfil this role; indeed, the NSG has historically served more to divide NPT states than to unite them. The rational way forward in this context would be to have the Zangger Committee continue with its existing mandate on nuclear items and for the NSG to work exclusively on the dual-use list and avoid duplication, relying on the Zangger Committee for the nuclear list (see Schmidt 1994). The argument that the NSG has more member-states – currently forty-five, as opposed to thirty-five for the Zangger Committee – is neither sound nor credible, as membership as such is not the critical issue. Negotiating a global export control mechanism is the pressing requirement of the day.

**Relevant UN Security Council resolutions**

UN Security Council Resolution 1540, the first international instrument adopted by the Council dealing with WMD proliferation to non-state actors, their means of delivery and related materials in an integrated and comprehensive manner, aims to prevent non-state actor access to materials and technologies for weapons of mass destruction. While legally binding on UN member-states in the context of the Charter, the resolution is not a formally negotiated multilateral treaty or instrument. Thus it is hardly surprising that implementation remains and probably will continue to remain patchy and somewhat controversial, not to mention the diverging views regarding its mandate and scope, and the future continuation of its related ‘Committee 1540’ (see Craft 2004). On the other hand, agreement was reached through resolution 1673 adopted unanimously by the Security Council.

On 27 April 2006, the Security Council extended, for a two-year period until 27 April 2008, the mandate of the committee established under resolution 1540 (2004) (UN Security Council Press Release, 2006a). Furthermore, unanimously adopting Resolution 1673 (2006), and acting under Chapter VII of the Charter, the Council also decided that the committee should intensify its efforts to promote the full implementation by all states of Resolution 1540, which required states to refrain from supporting, by any means, non-state actors that attempt to acquire, use or transfer nuclear, chemical or biological weapons and their delivery systems.

Security Council Resolution 1673 (2006) reaffirmed that none of the obligations in resolution 1540 of 2004 shall be interpreted so as to conflict with or alter the rights and obligations of states parties to the Nuclear Non-proliferation Treaty, the Chemical Weapons Convention and the Biological and Toxin Weapons Convention or alter the responsibilities of the International Atomic Energy Agency or the Organization for the Prohibition of Chemical Weapons. It also noted that the full implementation of Resolution 1540 (2004) by all states, including the adoption of national laws and measures to ensure the implementation of these laws, is a long-term task that will require continuous efforts at national, regional and international levels.

Resolution 1540 had also called on states to present a first report to that committee, no later than six months from the adoption of the resolution, on steps
they had taken or intended to take in its implementation. Through Resolution 1673, the Council called on all states that had not yet presented a first report to do so to the committee without delay. In addition, the Council decided that the committee would submit to the Council a report no later than 27 April 2008 on compliance with Resolution 1540 through the achievement of the implementation of its requirements. As of September 2006, 132 states plus the European Union had submitted a first report to the 1540 Committee. Following a review of first national reports, eighty-three states had provided additional information (UN Security Council Press Release, 2006b).

Nonetheless, concerns persist about the selective nature of the implementation of Security Council resolutions, particularly those adopted under the framework of Chapter VII of the Charter, dealing with threats to international peace and security. For example, Resolution 1172 (UN Security Council 1998), adopted in the aftermath of the nuclear-weapon tests carried out in May 1998, first by India and then by Pakistan, called for various measures to be implemented by the two states. Neither of the two states implemented the resolution but the Security Council never followed up. Moreover, there are several other examples of such dereliction and failure of the Security Council to follow up on the implementation of its resolutions on international peace and security under Chapter VII of the UN Charter.

Multilateral nuclear export control

There is a growing literature on the case for multilateral export control regimes. In 2004, IAEA Director General Mohamed ElBaradei called for a drastic improvement in export controls, to be pursued within an international framework, and for a universal, treaty-based, export control framework, while preserving the rights of all states to peaceful nuclear technology (ElBaradei 2004). In their zeal to strengthen export controls, the ‘ayatollahs’ of non-proliferation all too often ride roughshod over the inalienable rights of states to technology, thus adding another layer of inequity to the present nuclear non-proliferation regime. The existing export control regime suffers from at least seven major problems and deficiencies:

- Changing international situation.
- Lack of universality.
- Lack of legitimacy.
- Weak and inconsistent implementation.
- Lack of enforcement.
- Difficulties in verification of dual-use items in a globalizing and industrializing world.
- Lack of information-sharing needed to identify clandestine supply networks and acquisition programmes.

The current system of nuclear export controls relies on informal arrangements
that are not only non-binding, but also limited in membership. Many countries with growing industrial capacity are not included. Moreover, at present there is no linkage between the export control system and the verification system. Export control information is not systematically shared with the IAEA, nor even fully among the members of the NSG.

Interim steps to address some of these problems could include: universal adoption of the Zangger Committee’s trigger list; assistance to states that need help implementing their nuclear export controls; universal implementation of the IAEA Additional Protocol; requirement of reporting certain nuclear and dual-use transfers to the IAEA (Blackford 2005).

Lost in the sometimes emotional discussions on strengthening export controls and denials of technology is the simple yet basic consideration – that with the NPT having captured all possible signatory states (except India, Israel and Pakistan), the relevance of the existing export control mechanisms needs to be re-examined. This in turn would logically lead to the conclusion that what is needed is a formal, multilaterally negotiated, international treaty or convention that can provide both assurances of non-proliferation and assurances of reactor fuel and reactor technology supply.

Today’s nuclear export control regimes have failed both to prevent the emergence of clandestine nuclear supply networks and to engender legitimacy and universality. The existing regimes are based on Cold War models and rely on denials of information, technology and material. They remain largely opaque and unaccountable. They lack meaningful interaction with recipients and/or emerging suppliers. Indeed, at the 2000 NPT Review Conference, some delegations proposed ‘multilateralization of export controls’.

In an age of globalization and free trade, the oft-cited argument is that state ‘sovereignty’ includes ‘the right for a state to choose to whom it wants to export goods’. ‘If I do not like my neighbour, I will not supply him!’ (Schmidt 2000). Clearly, such a principle does not hold in the market place – a vendor should not be able to deny goods to buyers on political or ideological or subjective considerations. As has been seen, such approaches do not work: they create resentment, and, more important, they fuel clandestine supply networks.

On the other hand:

If multilateral export controls are to come to terms with increasingly fluid political, social, and economic conditions, a measure of flexibility and agility must be built into the system. Otherwise, savvy proliferators will retain a perpetual advantage over the regimes, and hazardous items will continue to slip through.

(Beck et al. 2002; see also Gahlut et al. 2004)

Furthermore, given the failure of the existing nuclear export control regimes and their apparent lack of legitimacy, moving to a negotiated global framework could:
• Garner legitimacy.
• Promote universality.
• Promote harmonized and strengthened nuclear export control standards.
• Enhance the quality and quantity of information sharing.
• Improve political and industry understanding of export controls.
• Through a review mechanism, respond more quickly to technological developments.

Thus a universal, negotiated, treaty-based multilateral export control system would have legitimacy. Moreover, it would be binding, and could include objective criteria for enforcement of controls on materials and technology exports as well as on the flow of such items to legitimate users.

The logical place for negotiating such a multilateral export control treaty might well be a negotiating forum in Vienna, given that the world’s primary nuclear expertise is to be found there. Furthermore, the existing expertise of the IAEA could be utilized for a universal multilateral export control system, given its decades of experience of safeguards and verification, a suite of safeguards strengthening measures, membership involving both NPT and non-NPT states and well functioning peaceful nuclear cooperation programmes. The IAEA is not necessarily seeking such a role – but building synergies between IAEA safeguards, multilateral export controls and multilateral approaches to the nuclear fuel cycle is both logical and useful.

The concept, scope and mandate of a multilateral export control system and of multilateral nuclear approaches could be broached at the 2007 session of the Preparatory Committee for the 2010 NPT Review Conference likely to be held in Vienna during the early summer. It is time to develop a post-Cold War treaty-based model that establishes a balance between assurance of non-proliferation and assurance of supply/access; promotes common goals of strengthening the non-proliferation regime while facilitating technology transfer in accordance with the NPT; provides for nuclear security measures; seeks to prevent transfers to non-state actors; and relies on principles of objectivity, transparency and accountability, as well as regular peer reviews.

**Multilateral approaches to the nuclear fuel cycle**

The control of access to sensitive nuclear technology has grown increasingly problematic in recent years. The nuclear market place has grown ever more complex, and many more countries have sophisticated engineering and industrial capacity. Nuclear technology has diversified, making it harder to track procurement and sales. Electronic communication has made it easier to transmit component designs and other information. Much of the sensitive equipment is ‘dual use’ – which makes it harder to justify export restrictions.

This means that the situation today is markedly different from that of the 1970s, when the NPT came into being. Under the current regime, there is nothing illegal about any NPT NNWS having enrichment or reprocessing
technology, or even possessing stocks of weapons-grade nuclear material, as long as these are declared to the IAEA and placed under Agency safeguards.

More countries have sought to master the nuclear fuel cycle – for economic reasons and, in some cases, as a good insurance policy for a rainy day, should their security perceptions or situation change. Whatever the reason, this know-how essentially transforms them into ‘virtual’ or ‘latent’ nuclear-weapon states. The principal ‘choke point’ for nuclear-weapon development is still the acquisition of weapons-usable nuclear material. Should a country with a full nuclear fuel cycle decide to break away from its non-proliferation commitments, a nuclear weapon could be only months away. This margin of security is untenable.

Assurance of supply

In light of these factors, since 2003 the IAEA Director General has advocated developing multinational approaches to the nuclear fuel cycle, as a way to better control the spread of sensitive nuclear technology. Several countries and organizations are working with the IAEA to create a framework to ensure the supply of nuclear fuel at competitive prices. This could remove the incentive or justification for additional countries to develop their own fuel-cycle capabilities (see below).

The report of international experts to explore options for better control over the proliferation-sensitive aspects of the fuel cycle (International Atomic Energy Agency 2005a) and the proposals offered by other experts and several governments11 have helped to shape new understanding of how such controls might be put in place. This could be done in a series of four steps (ElBaradei 2005):

- Ensure the supply of reactor technology and nuclear fuel.
- Accept a time-limited moratorium (of perhaps five to ten years) on new uranium enrichment and plutonium separation facilities – at the very least for countries that do not currently have such technologies.
- Establish a framework for multilateral management and control of the ‘back end’ of the fuel cycle (spent fuel reprocessing and waste disposal).
- Create a similar framework for multilateral management and control of the ‘front end’ of the fuel cycle (enrichment and fuel production).

Much attention is already being paid to the first step – ensuring supply. This step is especially important because providing reliable access to reactors and fuel at competitive market prices could remove the incentive or justification could be removed for countries to develop indigenous fuel-cycle capabilities. This in turn would contribute towards addressing current concerns about the dissemination of sensitive fuel-cycle technologies.

The key feature of such an arrangement is not simply availability, but reliability. For this assurance-of-supply mechanism to be credible, it must be based on apolitical, objective non-proliferation criteria. Under the IAEA Statute, the Agency is authorized to serve as the guarantor of two fuel-cycle-related services:
the supply of fissile material for fuel, and the reprocessing of spent fuel. The IAEA could therefore act as the facilitator and guarantor of a virtual or actual fuel bank, as a supplier of last resort.

A related but somewhat narrower approach has been advanced by US President George W. Bush and British Foreign Secretary Jack Straw. In February 2004, President Bush told an audience at the National Defense University that ‘enrichment and reprocessing are not necessary for nations seeking to harness nuclear energy for peaceful purposes’. In view of this, he proposed that the forty-four-nation NSG ‘should refuse to sell enrichment and reprocessing equipment and technologies to any state that does not already possess full-scale, functioning enrichment and reprocessing plants’ (Bush 2004).

This approach also found voice in a proposal the same month from United Kingdom Foreign Secretary Straw, who questioned whether states that fail to comply with their safeguards obligations ‘should not forfeit the right to develop the nuclear fuel cycle, particularly the enrichment and reprocessing capabilities which are of such proliferation sensitivity’. The Straw proposal (House of Commons Hansard 2004) went on to suggest that ‘this does not mean that they would be deprived of the possibility of constructing and running civil nuclear power stations. These could still operate with fuel supplied by countries honouring their safeguards obligations.’

Even though this is closer to the multilateral approach suggested by IAEA Director General ElBaradei, both the Straw and the Bush proposals proceed from the basis of a denial of certain nuclear technologies. However, the attempt to place ever more restrictions on supply may well have contributed indirectly to the emergence of clandestine nuclear supply networks. Iran, for example, has claimed that it was forced to turn to clandestine sources to meet its needs for civil nuclear technology when more open sources were shut off.

New initiatives

There have been several supportive reactions to Multilateral Nuclear Arrangements. In Moscow in July 2005, a conference organized by ROSATOM discussed, among other multilateral approaches, the feasibility of fuel leasing (Moscow Conference 2005). The United States announced in September 2005 in Vienna that it would make available 17.4 t of HEU to be down-blended as fuel and used as part of a fuel bank under an assurance-of-supply scheme (US Opening Statement 2005). Also Russia has indicated that it intends to make nuclear material available to the IAEA, to be used as part of an Agency fuel bank, and in January 2006 President Putin outlined a proposal to create a system of international centres providing nuclear fuel-cycle services, including enrichment, on a non-discriminatory basis and under the control of the IAEA (Putin 2006a, c). The uranium enrichment industry and the World Nuclear Association set up a working group to explore strategies for fuel assurances and published a report on ensuring security of supply in the nuclear fuel cycle, in May 2006 (World Nuclear Association 2006a).
In February 2006, Washington announced the GNEP–Global Nuclear Energy Partnership (US Department of Energy 2006), a programme based on seven elements:

- **More proliferation-resistant recycling.** Accelerate the development, demonstration and deployment of new technologies for recycling nuclear fuel that do not result in separated plutonium – a key proliferation risk of existing recycling technologies.
- **Minimize nuclear waste.** Significantly reduce the volume of nuclear waste to be disposed of in Yucca Mountain, making disposal less complex and minimizing the need for additional repositories for generations to come.
- **Develop advanced burner reactors.** Demonstrate and deploy advanced burner reactors that use the latest technology to produce energy from recycled nuclear fuel.
- **Establish reliable fuel services.** Establish a consortium of nations with advanced technologies to enable developing nations to acquire nuclear energy economically and while minimizing proliferation risk.
- **Demonstrate small-scale reactors.** Design and deploy small-scale nuclear reactors that are cost-effective, secure and well suited to conditions in developing nations.
- **Develop enhanced nuclear safeguards.** In order for the IAEA to monitor and verify nuclear materials effectively and efficiently, design advanced safeguards approaches directly into the planning and building of new, advanced nuclear energy facilities.

In June 2006, France, Germany, the Netherlands, the Russian Federation, the United Kingdom and the United States circulated a "Concept for a Multilateral Mechanism for Reliable Access to Nuclear Fuel". This is a proposal designed to establish a reliable supply mechanism, backed up by reserves of enriched uranium, and to support the expansion of nuclear energy taking due account of the needs of developing states, while obviating need for investment in expensive and sensitive nuclear fuel-cycle infrastructure. The IAEA would determine whether the receiving state meets the conditions for use of the back-up mechanism. A receiving state would be eligible provided it had: brought into force a comprehensive safeguards agreement and additional protocol, and had no exceptional safeguards implementation issues outstanding with the Agency, and adhered to accepted international standards of nuclear safety and the Convention on the Physical Protection of Nuclear Material and Nuclear Facilities, and chosen to obtain supplies on the international market and not to pursue sensitive fuel-cycle activities. Reserves could be held nationally, or rights regarding their use could formally be transferred to the IAEA, if so desired by the state providing the reserve.

The IAEA Board of Governors discussed this concept paper, as well as the general concept of assurances of supply, in June 2006. Wide-ranging views were expressed on ensuring the supply of nuclear fuel and reactor technology. Some
states referred to the various proposals made in that regard and emphasized the importance of an assurance-of-supply scheme, foreseen under the Agency’s Statute, for meeting the expanded use of nuclear energy and stemming the spread of sensitive nuclear technology. Other states stressed the complexities involved, and that any assurance-of-supply scheme should be consistent with the IAEA Statute and the right of member-states to research, develop and use nuclear energy for peaceful purposes. There was endorsement of further work on identifying and exploring the relevant questions and various options regarding assurances of supply of nuclear fuel and reactor technology. In addition, the Nuclear Threat Initiative, led by Sam Nunn and Ted Turner, is exploring the possibility of establishing a fuel bank under IAEA aegis for states that do not develop national uranium enrichment of plutonium reprocessing activities.

At the 2006 G-8 summit, agreement was reached on a ‘Statement on Global Energy Security’ (G-8 2006a). This included a ‘St Petersburg Action Plan on Global Energy Security’ which commits members: to further reduce the risks associated with the safe use of nuclear energy; a robust regime for assuring nuclear non-proliferation and a reliable safety and security system for nuclear materials and facilities; to make additional joint efforts to ensure reliable access to low-enriched uranium for power reactor fuel and spent fuel recycling, including, as appropriate, through a multilateral mechanism provided that the countries adhere to all relevant international non-proliferation commitments and comply with their obligations; and to further the development of peaceful nuclear energy, in a manner that promotes proliferation resistance of the nuclear fuel cycle, including preventing the spread of sensitive nuclear technologies (see G-8 2006a).

The St Petersburg G-8 ‘Statement on Non-proliferation’ (G-8 2006b) also endorsed multilateral approaches. Here the G-8 agreed, among other things, to: expand the peaceful use of nuclear energy in a manner consistent with nuclear non-proliferation commitments and standards; develop and implement mechanisms assuring access to nuclear fuel-related services to states as an alternative to pursuing enrichment and reprocessing activities; further strengthen this common approach to continue reviewing multinational approaches to the fuel cycle, including international centres to provide nuclear fuel-cycle services, with the IAEA, as well as relevant practical, legal and organizational solutions; and to facilitate developing credible international assurances of access to nuclear fuel related services. Moreover, in the Joint Statement by Presidents Putin and Bush on ‘Cooperation in the Peaceful Uses of Nuclear Energy’ agreed in St Petersburg (Bush and Putin 2006), reference is made to their intention to work together, with active IAEA involvement, so that all states may benefit from the peaceful uses of nuclear energy without pursuing uranium enrichment and spent fuel reprocessing capabilities.

All these initiatives and statements reflect an emerging consensus, for the first time ever, on working towards multilateral nuclear approaches.
Pros and cons of a multilateral approach

The potential benefits of multilateral nuclear approaches for the non-proliferation regime are both symbolic and practical. As a confidence-building measure, multilateral approaches have the potential to provide enhanced assurance to the international community that the sensitive portions of the civilian nuclear fuel cycle are less vulnerable to weapons proliferation, without singling out ‘good’ and ‘bad’ countries. If implemented, these approaches might also facilitate the continued use of nuclear energy for peaceful purposes and enhance the prospects for the safe and environmentally sound storage and disposal of spent fuel and radioactive waste.

The proliferation risks inherent in enrichment and reprocessing technologies could be reduced by having more than one country involved in their operation. Thus, any country that sought to break out of its NPT commitments would not only be choosing to violate the will of the international community but potentially forcing a confrontation with another state or states that might not want such a course. In addition, such approaches could strengthen non-proliferation norms by requiring nuclear verification and security and safety measures that could go beyond existing international agreements and conventions. The partners in such endeavours could conceivably allow IAEA inspectors ‘any time, anywhere’ access rights, in addition to the use of any verification technologies deemed necessary by the Agency, as well as other agreed confidence-building measures.

Multilateral approaches would provide benefits of cost-effectiveness and economies of scale for smaller countries or those with limited resources, while providing benefits of the products of nuclear technology like nuclear fuel for power plants and subsequent storage of spent fuel. Similar benefits have accrued in other high-technology and high-security sectors, among them aerospace and high-speed computing.

The argument in favour of multilateral approaches, however, is not without its critics. Opponents point to the loss or limitation of state sovereignty and independence of ownership or control over a key technology sector. Countries with differing levels of technology, institutionalization, political relationships, economic development, resources or requirements might find multilateral approaches inconvenient, unfeasible, restrictive or simply not beneficial. Others might argue that multilateral approaches could lead to further dissemination or loss of control over sensitive nuclear technologies and to weaker standards of nuclear security and safety.

Obviously, if all sensitive nuclear technology is made available to all participants in a multilateral arrangement, then there is no benefit to be gained. To guard against this, multilateral efforts could incorporate some restrictions in order to avoid the risks of sensitive technology transfer. Within a multilateral context, this can be done in a more legitimate and acceptable manner than with unilateral or cartel-based denial policies, allowing countries greater access to peaceful nuclear technology while discouraging them from developing
independent national programmes (overt or covert) that could lead to weapons development. To meet the twin objectives of non-proliferation and multilateralization, nuclear facilities can be provided to partners in a ‘black box’ mode. The technology holders construct and operate facilities that are managed and operated multilaterally, without technical know-how being disseminated. Such an approach is being pursued with regard to a URENCO-supplied uranium enrichment plant to the United States (see World Nuclear Association 2006b).

Any viable future multilateral approach will require states with nuclear weapons to set an example by using their enrichment and reprocessing plants to provide nuclear fuel to other states that have eschewed these technologies. Assurances of supply will need to be devised in a manner that is commercially competitive, avoids monopolistic situations and provides for back-up supply in the event that some suppliers might be unable to provide the required services, for whatever reason.

Conclusion

The concerns evoked by clandestine networks, the availability of and increasing access to nuclear technology and the possibility that some countries may be tempted to use such technology for non-peaceful purposes cannot be ignored – particularly in the face of past evidence that some countries have not complied with their safeguards obligations. It seems the time has come for new thinking – or, to be more accurate, for a re-exploration of some old thinking in the light of new challenges.

When the NPT entered into force in 1970, sensitive nuclear technology was widely considered as being out of the reach of most countries. This is clearly no longer the case. Access to such technologies has increased, particularly over the past few years: as many as forty countries may now have the technical know-how required to produce nuclear weapons. The legal regime has not kept pace with these technological developments.

In the absence of an enhanced legal regime, the sole remaining and somewhat fragile barrier to the development of nuclear weapons may be a state party’s assessment of its security situation and requirements. Such considerations are rarely fixed but alter over time. In the face of external events, a country that now has no interest in incorporating nuclear weapons into its security doctrine may one day decide otherwise. One of the fallacies of the ‘good guys/bad guys’ distinction is that occupants of these categories may shift. Betting on future non-proliferation solely on the basis of the currently benign intentions of states parties dangerously narrows the margin of security.

The discussion on establishing export controls to deny access to sensitive elements of the nuclear fuel cycle has come full circle. Today interest focuses on promoting multilateral approaches to the nuclear fuel cycle, approaches which involve assurances of supply of nuclear fuel as well as the possibility of the take-back of spent fuel, to promote further growth in nuclear energy, provide energy security and assurances of non-proliferation. It is increasingly clear that
the new challenges to the nuclear non-proliferation regime require a fresh approach and response. Any attempts to strengthen the regime by further denial of technology – including tightening the cartel-based export control mechanisms – hold little likelihood of success.

The days of the Cold War system of cartel-based, non-transparent, export controls based on strategies denial may well have run their course. Now it is time to focus on developing a multilateral treaty-based, universal export control system that involves the participation of all states, relies on the rule of international law and accountability, and provides for both assurances of non-proliferation and assurances of access to civilian uses of nuclear technology. Under such a multilateral system, it would be possible to set up multilateral nuclear fuel-cycle facilities, in the service of global non-proliferation and energy demands, while limiting access to weapons-usable technologies and materials. An international verifiable and universal treaty banning the production of fissile material for nuclear weapons would be central to such an endeavour.

Any future world based on multilateral nuclear approaches would, by definition, need to be equitable and non-discriminatory. This means that all uranium enrichment and plutonium separation activities, regardless of their location – in NPT NNWS and NPT NWS and non-NPT states – would all have be under the IAEA safeguards system. Multilateral approaches to the nuclear fuel cycle are still in their infancy and progress remains dependent on political will, but for the first time in nearly five decades there are new opportunities and new thinking. Despite the disappointments of such initiatives in the past, the Multilateral Nuclear Arrangements under contemplation today merit serious consideration. Old wine in new bottles, blended carefully with some new vintages, may well result in the elixir for a strengthened, relevant and universal regime that is capable of dealing with contemporary and future challenges.

Notes

* Nothing in this text should be construed as reflecting the views of the IAEA.
1 Henry D. Smyth’s Atomic Energy for Military Purposes, published by the US government in 1945, provided the first official public report on the ‘atomic’ revolution. Ironically, it was the US Navy’s nuclear ship propulsion programme that started the civilian nuclear programme in the United States. See Goldschmidt 1980.
2 Six reactors in the United Kingdom, three each in Italy and the United States, two in the Soviet Union and one in France.
3 The Franck Report has been reproduced in Jungk 1958.
6 For a summary, see International Atomic Energy Agency 2005a: 30–1.
The first part of this section draws on the Expert Group Report to the Director General of the IAEA, Multilateral Approaches to the Nuclear Fuel Cycle (International Atomic Energy Agency 2005a) – the author was the Scientific Secretary to the Expert Group.

A background and overview is available at www-pub.iaea.org/MTCD/Meetings/Announcements.asp?ConfID=147#background.

Since the publication of IAEA Director General Mohamed ElBaradei’s *The Economist* article in October 2003 there have been various proposals on the theme of better controls on the sensitive elements of the nuclear fuel cycle; see for example Scheinman 2003; Bush 2004; Stein *et al.* 2004; McCombie and Chapman 2004; Deutch *et al.* 2004/05; UN Secretary General’s High Level Panel 2004; Rauf and Simpson 2004; Wolfshal 2004; Pellaud 2005a; Annan 2005; Putin 2006b; US Department of Energy 2006.

Communication dated 31 May 2006 received from the Permanent Missions of France, Germany, the Netherlands, the Russian Federation, the United Kingdom of Great Britain and Northern Ireland and the United States of America, GOV/INF/2006/10, IAEA, 1 June 2006.

As a follow-up, the IAEA convened the conference on ‘New Framework for the Utilization of Nuclear Energy in the Twenty-first Century: Assurances of Supply and Non-proliferation’, September 2006.
Part IV

Assessments and recommendations
Regaining common ground

Sverre Lodgaard

Status and outlook

The loss of common ground

Forty years ago, when the five major powers (P-5) had acquired nuclear weapons and others were expected to do the same, nuclear and non-nuclear-weapon states joined hands to bring proliferation to a halt. Signed in 1968 and entering into force in 1970, the nuclear Non-proliferation Treaty (NPT) became the backbone of international non-proliferation efforts. Gradually, a variety of measures were added to enhance its effectiveness – arms control agreements, nuclear weapon-free zones, security assurances for non-nuclear-weapon states (NNWS), full-scope safeguards, rules of international nuclear commerce and national export control regulations – turning it into an international regime with much in-built redundancy and resilience to pressure. Once in a while, the superpowers used their leverage to keep clients in the non-proliferation fold, sustaining the objectives of the regime. Common ground was established.

After the Cold War, the non-proliferation regime scored more successes. South Africa became the first state to eliminate its nuclear weapons; Russia became the sole heir of Soviet nuclear weapons; NPT membership increased considerably; the safeguards system was further improved; nuclear arsenals were significantly reduced; and by the time the 1995 NPT Review and Extension Conference was convened, a Comprehensive Test Ban Treaty (CTBT) was in sight. The conference came at the end of a period of good news, facilitating the decision to extend the treaty indefinitely.

A little later, indefinite extension would no longer have been possible. New problems emerged along with new ways of handling them. The non-proliferation regime remained important yet increasingly inadequate. In particular, its ability to enforce compliance, which relies on the Security Council’s ability to act, appeared too weak. The International Atomic Energy Agency (IAEA) reported Iraq, North Korea, Libya and Romania to the Council for possible censure because of their nuclear programmes, but to little avail. North Korea was reported twice, but in the face of Chinese opposition the Council never voted to punish it. On one occasion, it did not even express concern. In the case of Iran,
which was found to be in non-compliance with its safeguards obligations, and where the IAEA remains unable to conclude that there are no undeclared facilities or activities, the veto powers have a hard time forging common positions.

In 1993, President Clinton directed the Department of Defense to prepare the Counter-proliferation Initiative and warned that the United States was prepared to use force to prevent proliferation in ‘rogue states’. While at first counter-proliferation was seen sometimes as a complement to non-proliferation, sometimes as a departure from it because of its inefficiency, it did entail a move from the State Department to the Department of Defense (Forland). President Bush took the initiative further and made it part of a radical reorientation of US policy: under the impact of 9/11, the new National Security Strategy of 2002 marked a shift towards preventive wars to change the regimes of rogue states and to stop nuclear proliferation. The targets were primarily Iraq, Iran and North Korea, the states that were dubbed the Axis of Evil. While in the NPT nuclear weapons are the units of account – it is the weapons that should not proliferate and that should finally be eliminated – the Bush administration shifted the attention toward their possessors, repeatedly emphasizing that nuclear weapons must remain in the right hands/must be kept out of the worst hands. This is a selective policy targeted at US enemies, not a universal non-proliferation policy.

US policy became selective in other respects as well. It said ‘no’ to some arms control agreements such as the Anti-ballistic Missile (ABM) Treaty and the CTBT; ‘yes’ to others, among them the NPT. In the NPT, it highlighted some provisions, notably the commitments of NNWS parties, while ignoring the NWS obligation to disarm. Gone are the commitments to the ‘principles and objectives’ and the ‘thirteen steps’ towards nuclear disarmament adopted by the review conferences in 1995 and 2000. It jeopardized the entire review process: if governments ignore or discard commitments whenever it proves convenient, it will never be possible to build an edifice of international cooperation (Miller).

In short: common ground no longer exists. In the spring of 2005 the NPT Review Conference got nowhere, and a few months later the UN summit could not agree on any statement on non-proliferation and disarmament. For how long can the treaty and the regime that it harbours stay intact under such circumstances? Is it bound to unravel? Can common ground be re-established?

**Resilience**

The resilience of the regime should not be underestimated, however. The NPT has more members than any other arms control agreement. Except for the special case of North Korea, only Israel, Pakistan and India remain outside. Many members stick to what is known as the Swedish example: regardless of what the NWS do, it would not be in Sweden’s interest to acquire nuclear arms. In Europe, Africa and South America many NNWS stay committed to that kind of thinking and to the NPT. In East Asia and the Middle East, where proliferation pressures are strong, the great majority of states still hope that the treaty will survive. In these regions, however, one more proliferator may lead others in
the same direction. Far from being isolated challenges to the treaty, North Korea
and Iran are issues of great regional significance, and with a potential to rock or
rescue the entire non-proliferation regime.

To various degrees, the P-5 also want the NPT to stay. If it unravels, there are
no NWFZs to fall back on in the Middle East and North East Asia, where prolif-
eration may occur and get out of hand. International safeguards may continue on
the basis of facility agreements (INFCIRC/66), but this is an incomplete substi-
tute for NPT-type safeguards. Redundancies exist, but the fallback options are
not attractive.

Outside the NPT, the United States has taken a number of supply-side initi-
atives such as cooperative threat reduction measures to secure dangerous items
at the source; assistance to other states in instituting effective non-proliferation
controls (van Dassen); the Proliferation Security Initiative (PSI) to interdict
nuclear transfers to and from states and non-state actors of proliferation concern
(Goldblat); and Security Council Resolution 1540 criminalizing non-state actors
trying to deal in nuclear materials, equipment and technology (Rauf). These are
instruments in their own right: most of them are compatible with the multilateral
regime, but there has been no push to integrate them and exploit the synergies
that they offer. If, in addition, the global hegemon believes it can handle critical
cases itself, together with coalitions of the willing, the regime may be marginal-
ized.

**Buying time**

The perspective that this builds up to is that the regime may linger on for quite a
while even in the absence of common ground. It has to do so in order to survive,
for renewed convergence of interests is unlikely to develop any time soon. For
the time being, all that can be achieved are small-scale adjustments buying time
for common ground to be rebuilt at a later stage when, hopefully, the political
situation makes that possible. The critical question, then, is if this will be
enough, or happen soon enough, to avoid collapse.

The answer depends, first of all, on the United States. If policies of regime
change, preventive war, unilateralism and coalitions of the willing, selective
non-proliferation and nuclear-weapon modernization continue for long, the
regime will probably unravel. This does not mean that, for common ground to
re-emerge, the United States has to drop all of its current policies and go back to
the principles and practices of the international regime. Neither can this be
expected of the world’s undisputed number one, accounting for nearly half of
the world’s military expenditure. The incompatibilities relate, above all, to the
policy of regime change and to the maintenance and modernization of US and
other NWS arsenals. At each and every Review Conference of the treaty, imple-
mentation of Article VI – the disarmament clause – has been the most con-
tentious of all issues. Today, NWS disregard of it blocks a range of other
measures to prevent further proliferation. If it continues, it spells degradation of
the NPT (Miller).
Is the way forward a matter of incrementalism or does it take another grand bargain? To buy time, incrementalism is a *sine qua non* – but can common ground be re-created without a new comprehensive agreement – another grand bargain? This is basically a world order issue. In 1968, the victorious powers of the Second World War, which did so much to shape the United Nations, managed to orchestrate another comprehensive deal in their own image. Having made the P-5 synonymous with the NWS, they drew the ladder up behind them. A new grand bargain would be difficult to make, however, for to reflect contemporary realities it would have to define a particular role for the particularly strong, i.e. the United States. Indeed, it is hard to imagine that the other four, and the great majority of NNWS, would accept something of that sort. Only a dramatic shake-up of world affairs could lead states to reach out for another grand compromise.

Rather, the way forward must be a matter of buying time, not for a new bargain to be struck, but for the basics of the treaty to be reconfirmed; substantial steps for balanced implementation of it agreed; and politically binding interpretations of some it provisions negotiated. While the basics – the trade-offs between non-proliferation, disarmament and peaceful utilization of the atom – remain valid, new technological and political circumstances and lessons learned from nearly fifty years of NPT history put many issues in a different light. Given the complexity of the NPT amendment provision, it is unlikely that any significant change in the treaty could be agreed. The parties may therefore find it advisable to negotiate legally and/or politically binding interpretations (Goldblat).

If current trends continue, time is running out for such a perspective. The immediate challenge is therefore to exploit whatever opportunity exists for incremental changes that can keep the treaty afloat while preparing and waiting for revitalization of the basic bargain. All parties – the NWS in particular – must demonstrate willingness to honour their commitments.

**Managing proliferation pressures**

*Pressures from above: the failure to disarm*

After a period of significant reductions in the aftermath of the Cold War, nuclear disarmament negotiations came to a standstill in the mid-1990s, followed by erosion of existing arms-control agreements. Identifying measures that have a fair chance of being implemented has become a tall order. Indeed, it may seem mission impossible. On the other hand, some progress is vitally important for the treaty to survive.

What can realistically be achieved within the current mindsets of NWS is one thing; what is realistically needed in order to save the NPT may be quite another. Saving the NPT may require not disarmament proper, but a set of steps to make sure that the arms race is brought to a halt. Those steps should first of all address the opening sentence of Article VI, calling for ‘cessation of the nuclear arms race at an early date’; they will be elaborated upon at the end of
this chapter. Significant progress in this direction must be visible by the time of the next Review Conference in 2010.

What can be achieved within current mindsets, in the spirit of ‘doability’ and in the perspective of buying time? The following possibilities merit attention:

**Declaratory policies**

Clearly, there is a role for declaratory measures to uphold the objective of a nuclear weapon-free world while emphasizing the concept and practice of collective security, which is the compass of the UN Charter. There are no material prerequisites involved in such acts: all that is required is to make up one’s mind and speak out. The higher the messenger’s position, the greater the impact: only elected heads of state may have the visibility and prestige to make a real political difference. Further down the hierarchy, signals may not extend much beyond existing disarmament constituencies. Right now, even NNWS are remarkably silent at the upper echelons. Nuclear doctrines tend to be as widely disregarded by disarmament diplomats as they are central to nuclear planners (Carle 2006).

In the Final Declaration of the 2000 NPT Review Conference, which was adopted by consensus, the member-states clarified and confirmed their unequivocal commitment to eliminate all nuclear weapons. Later, some NWS have returned to guarded, conditional statements. Others have simply fallen silent. It is as if the NWS – the United States and France in particular – regard Article VI of the NPT moot in the same way that treaty members have dealt with Article V on peaceful nuclear explosions (PNEs).

**US and Russian strategic nuclear weapons**

When the post-Cold War ‘period of opportunity’ came to an end towards the mid-1990s, less and less attention was devoted to strategic nuclear issues. Far from nullifying the material realities of mutually assured destruction, political declarations of cooperation and partnership meant benign neglect of that which should have been overturned and transcended.

The 2002 Strategic Offensive Reductions Treaty (SORT) merely says that by 31 December 2012, the parties shall have no more than 2,200 strategic nuclear weapons deployed. It has no benchmarks or intermediate goals, no verification mechanism to ensure compliance and no provision for information exchange. Since it expires on the same date, the parties may revert to higher levels shortly afterwards, for no weapons need to be destroyed: those that are withdrawn may be kept in reserve. The flexibility is virtually complete.

Today, as big-power relations are strained, these realities may undercut international cooperation on security issues and sow the seeds of renewed nuclear modernization efforts. In order to put a brake on the on-going slide of US–Russian relations, the following measures may serve as starting points for further progress: (1) elaborate on SORT to define reductions in stages, warhead-counting rules and transparency measures; (2) extend the duration of
START I to fill the arms control and verification gap between 2009 – when START I is due to expire – and 2012; (3) abandon launch-on-warning practices in ways that are verifiable, reassured by mutual observation of strategic force exercises to prove that launch-on-warning is not the task of training; and (4) revive the Joint Data Exchange Centre which was agreed in June 2000 but which seems to have fallen victim to deteriorating US–Russian relations (Arbatov 2006).

Non-strategic nuclear weapons

The 2000 NPT Review Conference obliged the parties to take practical steps to reduce ‘non-strategic weapons, based on unilateral initiatives and as an integral part of the nuclear arms reduction and disarmament process’ (NPT Review Conference 2000a). Since then, nothing has happened. Russia has proven particularly recalcitrant: being concerned about its conventional weakness in Europe and in relation to China, and about the US presence in the Caucasus and Central Asia, it relies all the more on tactical nuclear weapons. Because of their relatively small size and, in some instances, lack of electronic locks and location outside of central storage sites, non-strategic weapons would appear to be the nuclear weapon of choice for terrorists (Potter).

Russia keeps tactical nuclear weapons at air and naval bases, ready for use, and routinely deploys them on attack submarines and surface ships at sea (Arbatov 2006). Gorbachev’s October 1991 initiative raised a somewhat different prospect: it announced that all tactical nuclear weapons on surface ships and multi-purpose submarines would be removed to central storage, adding that some of them would be destroyed. The United States keeps close to 500 tactical nuclear gravity bombs in Europe.

Today, tactical nuclear weapons in Europe are an anachronism. The 2,000–3,000 Russian weapons deployed on European soil should be withdrawn to central storage in Russia, and the US weapons to storage in the United States. If it is still deemed necessary, extended deterrence could be upheld by remaining nuclear forces, which in the case of the United States represent a unitary arsenal anyway. In US doctrine, there is no longer any difference between strategic and sub-strategic nuclear weapons, only between strategic and sub-strategic missions.

A simple step would be for the United States and Russia to reaffirm the 1991 Presidential Nuclear Initiatives on withdrawal and reduction of tactical nuclear weapons systems, and provide detailed information on their implementation. Other measures that could be considered are enhanced security for sub-strategic weapons both in storage and transport; reduced alert levels by extending the time required for re-mating of warheads with delivery vehicles; and advanced notification of such re-mating (Potter 2006).

A Fissile Material Cut-off Treaty (FMCT)

While the prospects are far from promising, an FMCT continues to be the next logical step for nuclear disarmament and non-proliferation. Options to reopen
the stalled FMCT issue should therefore be explored. An important supplemental measure would be to implement the Trilateral Initiative (United States, Russia and the IAEA) concerning permanent removal and verification of nuclear materials from NWS stockpiles.

The simplest would be to go for a ban on further production of fissile materials for military ends, leaving existing stocks aside. However, well known concerns about negotiability notwithstanding, it would not be prudent simply to ignore the stocks issue, as this would amount to neglecting the proliferation risks posed by them. As a policy driver for stockpile control, an extended FMCT could include provisions for the handling of excess nuclear material, information exchange on stocks and a set of general norms of nuclear material management (Schaper and Mærli).

A stepwise approach to an FMCT could start with a political declaration containing a fissile material cut-off commitment and a commitment to enter negotiations on a non-discriminatory, legally binding treaty. The next step could be a framework treaty enshrining the basic norms, and indicating a process for moving towards transparency, verification and incorporation of stocks. The Conference on Disarmament (CD) apart, one procedural possibility would be to have the eight countries directly concerned get together to work out a text; another to have these eight joined by eight leading NNWS to negotiate a framework agreement to be presented to the CD or the UN General Assembly; yet another to create an open-ended working group of the General Assembly for the purpose. Building on the framework agreement, the third stage could deal with verification and scope, cast in the form of additional implementation protocols or in the safeguards format applied by the IAEA, i.e. model agreements on the basis of which bilateral agreements could be concluded between the IAEA and individual states.3

**Non-targeting**

Today, thousands of nuclear weapons remain on hair-trigger alert under political circumstances that are very different from those of the Cold War, when this practice was instituted. It is incumbent on the parties to the East–West confrontation to reduce and eliminate the residual risk of nuclear war by technical error or human mistake. De-alerting4 and deactivation by warhead separation and storage at some distance from the delivery vehicles, or by separation of guidance systems and their parent missiles, are options that may also encourage states in other regions of tense conflicts to institute the same (Masood, Mohan).

**No-first-use**

Is it possible to breed new life into the idea of no-first-use of nuclear weapons? China and India have adopted such doctrines, and a no-first-use commitment has been written into an exchange of letters between the leaders of Russia and China. In Europe, close cooperation has developed between the European Union
and Russia. France, the United Kingdom and Russia have become ‘strategic partners’. Still, they reserve the right to be first in using nuclear weapons against each other. Obviously, this is an anomaly – a reminder that it is often more difficult to get old ideas out than new ideas in.

What does it take to bring nuclear policies in line with political realities? Would the nuclear-weapon members of the European Union be prepared to enter a no-first-use accord with Russia? Would Russia, which has upgraded the role of nuclear weapons after the Cold War to compensate for conventional weaknesses, be prepared to do the same? Perhaps shifts to such doctrines can take place in a gradual fashion as conditions become ripe, without waiting for universal agreement.

In doctrines of no-first-use, nuclear weapons are accorded one function and one only: to deter their use by others. Limited to that purpose, a fraction of today’s major power arsenals would suffice. In particular, there would be no role for non-strategic or tactical nuclear weapons for war-fighting purposes. In the ultimate analysis, the disarmament corollary of no-first-use doctrines is that nobody would need nuclear weapons if nobody had them.

Transparency and predictability

Within states, excessive secrecy poses problems for democratic oversight and civilian governance of nuclear weapons and production complexes. Between states, it may exacerbate security-dilemma anxieties, increase tension and stimulate arms build-ups to the point where some NNWS may decide to reconsider their decision not to acquire nuclear arms.

Transparency and predictability may be advanced through Declarations on Future Capping, whereby NWS declare the maximum number of warheads in their possession by a given year, say, 2010 (Müller 2006). This would provide some flexibility for China, India and Pakistan, which may not be ready to stop enlarging their arsenals all at once. The declarations may contain conditions – e.g. no nationwide missile defence systems that would compromise moderately sized deterrent forces – and some helpful opacity can be preserved to ease the participation of states which may deem their arsenals to be embarrassingly small. Yet some transparency would be gained by showing what smaller NWS consider to be minimum deterrents. Obviously, Israel’s policy of ambiguity stands in the way of participation in this measure.

Disarmament education

While it is unrealistic to assume that prevailing national views regarding nuclear weapons will change soon, it is nevertheless important to initiate steps today to change mindsets and forge norms consistent with formal national obligations to nuclear disarmament and non-proliferation. To this effect, disarmament education is essential. The key educational objective should be to develop critical thinking skills – ‘how to think’ rather than ‘what to think’ about peace and security issues (Potter).
Managing pressures from within: Iran and North Korea

Iran

What could a political solution to the Iranian problem be? Which are the parameters? Having hidden the programme for eighteen years and having tried to mislead the IAEA through most of 2003, it takes a lot to re-establish confidence in Iran as a NNWS.

Ideally, a solution should be sought within the framework of the international non-proliferation regime, and in such a way that it would strengthen the regime. Iran’s acceptance of the Additional Protocol would help establish the protocol as the new verification norm. Acceptance of voluntary transparency measures could set a valuable precedent for clarification of the nuclear history of other states which have failed to live up to their safeguards obligations, or been suspected of irregularities. If Iranian participation in a multinational fuel-cycle centre becomes part of the solution, this would be the first time such a venture is set up in a proliferation-prone region. Last but not least, if the United States would extend credible security assurances to Iran, an important proliferation-driver would be removed and the international regime would stand to gain.

At the turn of 2005/06, Russia invited Iran to cooperate on uranium enrichment on Russian soil. Iran, however, wanted to combine industrial-scale enrichment in Russia with pilot-scale enrichment in Iran, often referred to as research and development activities. For the Western powers no enrichment on Iranian soil was acceptable. Russia took the same view.

Prior to the meeting of the IAEA Governing Board on 6 March 2006, Russia indicated that Iran might nevertheless be allowed to do some small-scale enrichment works, small enough to be militarily insignificant. The Director General of the IAEA had similar thoughts, realizing that in order to strike an agreement with Iran, some face-saving measure would be necessary. Germany may not have been alien to the idea, but France and the United Kingdom were negative, and the United States rejected it out of hand. After a while, Russia said it would not introduce such a proposal, and the E-3 maintained its position not to accept any degree of enrichment in Iran.

In textbook logic, the Iranian crisis presents an opportunity to follow up on the idea of a zone free of weapons of mass destruction in the Middle East. A first step could build on President George Bush Sr’s arms-control proposal of 1991, in which he called for a freeze on reprocessing activities in Israel. Today, a freeze on the production of fissile materials in the Middle East would have two main addressees: Iran and Israel. Agreement to do this would amount to a regional cut-off in the production of fissile materials. If Israel could be convinced to institute a freeze in Dimona, it would be harder for Iran to resist doing the same. More than that, it could be turned into a diplomatic victory for Iran. However, Iran does not recognize Israel; Israel is not ready for it; the United States supports Israel; and multilateral arms control has no important place in the George W. Bush administration’s approach to proliferation problems.
Textbook logic may eventually become good political logic, but hardly in time to help solve the Iranian problem.

A Libyan solution has been recommended also for Iran. However interesting, this solution is probably too unique to be applicable to others (Müller), and certainly not to Iran. There are no signs that Iran will make a similar turnaround or that, in the last instance, it will back down and accept the demands made by the IAEA and the Security Council.

The endgame will probably be a US–Iranian matter, for the Europeans cannot solve Iran’s security concerns, and they are at the core of conflict. A political solution presupposes US willingness to negotiate, in secret, a package deal involving a number of regional issues in addition to the nuclear one. The alternative is the use of force, by the United States or Israel or the two together. A decision may have to be made in 2007, for 2008 is election year in the United States and Israel is pressing for a solution – one way or the other – while George W. Bush is still President of the United States.

The gains of bringing escalation to a halt and of achieving a political solution can be fully assessed only when compared with the costs of war. The costs cannot be predicted with any precision, but they are potentially huge, not only for the warring parties, but for the entire region of the Middle East and for energy prices and economic development worldwide. Different from the case of Iraq, where realistic assessments of the long-term consequences of war were absent, much attention has been drawn to the political implications of the use of force against Iran. The lessons from Iraq are sobering.

North Korea

Two approaches to bring North Korea back into the NNWS fold have been tried: the agreed framework between the United States and the DPRK, signed in 1994, and the six-power talks launched in April 2003 involving the two Koreas, Russia, Japan, China and the United States, and hosted by China. Implementation of the agreed framework broke down in 2002. By September 2006, five rounds of talks had been held in Beijing.

Long before the agreed framework collapsed, there were several failures to meet the timeline: normalization with the United States was slow to materialize, light-water reactor (LWR) construction was delayed, and some fuel oil deliveries were irregular. Still, progress was made in US–DPRK relations towards the end of the Clinton administration – but by that time the Khan network had not been exposed. What finally terminated the agreed framework was the US assertion that North Korea was conducting a secret uranium enrichment programme in parallel with the plutonium programme, and its request that the DPRK become clean. To date, there is no hard public evidence to support this assertion. However, A.Q. Khan visited North Korea thirteen times; he has admitted that he went there to assist; and it was primarily enrichment technology that his illicit network offered. The United States ended its heavy fuel-oil deliveries and North Korea reactivated its plutonium-production cycle.
When the agreed timetable began to slip, it was the beginning of the end. Deep suspicions and conflicts of interest called for fall-back options, possibly leading North Korea to go for the uranium route to weapons, an option which had not been explicitly prohibited by the agreed framework. While North Korea keeps hammering at the US door, it is hard to envisage another bilateral deal of this kind. Discouraged by fresh experience, and in the absence of any trust, reassurances by other regional states are crucial to success.

However, as of October 2006, neither had the six-power talks made much progress. The guidelines that were agreed in September 2005 – a sensible approach to the problem – were immediately undercut. One of them called for steps to be taken in parallel, ‘commitment by commitment, action by action’.6 However, the ink was barely dry when both the United States and North Korea argued that the other side had to move first. Only four days after signing the United States imposed sweeping financial sanctions on North Korea to cut off its access to the international banking system, branding it a criminal state guilty of counterfeiting, money laundering and trafficking in weapons of mass destruction.7 The administration was obviously split on the matter.

Barring a change in political culture and orientation in Washington and/or Pyongyang, Peter Hayes argues that the only way to repair the damage is for an authentically regional system of nuclear non-proliferation to be developed by the local states. The starting point would be the Joint Declaration of the Denuclearization of the Korean Peninsula of 1992. By not permitting any fuel-cycle elements, the declaration enhances current efforts to effectively separate civilian and military applications of nuclear energy.

Neighbouring states could be invited to join in, gradually extending the denuclearized area to cover not only Japan and Taiwan but parts of China and the Russian Far East as well (Hayes). The idea has been entertained before: when a Nordic NWFZ was discussed in the 1980s, deployment limitations in areas adjacent to the zone – primarily on Soviet territory – became an integral part of the considerations, accepted also by the Soviets (Lodgaard and Thee 1983). In usual fashion, the NWS would be asked to respect the status of the zone and extend security assurances. An arrangement of this kind would address not only the Korean problem, but proliferation pressures in North East Asia in general.

Managing pressures from outside: the three-state problem

For many years, supporters of nuclear non-proliferation have been caught between the unrealistic hope that India, Pakistan and Israel will abandon their nuclear weapons and the controversial prospect of accepting them as NWS. On the one hand, there is no particular reason to believe that they will dismantle their nuclear arsenals any sooner than any of the five recognized NWS. The paternalistic language of UN Security Council Resolution 1172 of 6 June 1998 is no longer instrumental, if it ever was. On the other hand, treating these ‘hold-out’ states for what they are has been anathema: the NPT recognizes five NWS only; the NSG guidelines make full-scope safeguards a precondition for nuclear.
transfers; and some NPT parties joined the treaty on the understanding that no other states would openly declare a nuclear-weapon capability.

India

The US–India Joint Statement of 18 July 2005 treats India ‘as if’ it were a member of the NPT. The formula is not new: this was French policy for quite a while, until it became a regular member in 1992. India would acquire the same benefits and advantages as other states ‘with advanced nuclear technology’ (euphemism for NWS). In return, it would assume the same responsibilities and practices. The deal treats India for what it is, i.e. a de facto NWS (Mohan).

The non-proliferation rationale for such an arrangement is simple. To lean on India to eliminate its nuclear arsenal and join the NPT as a NNWS is unrealistic to the point of being counterproductive. Neither can it join as a NWS, for the NPT recognizes five NWS only and, in practice, cannot be amended. Better, then, to commit it to the non-proliferation regime on an ‘as if’ basis. For in the long run, policies are best when based on facts and not on fiction.

The critical question is whether the gains come at the cost of diminished commitments by NPT parties. While supported by France, the United Kingdom, Russia and others, some NNWS see it as a reward for imprudent behaviour. At the heart of it is the problem of recognition. Unless international law has a life of its own entirely disconnected from the realities of the world, de jure recognition of India will follow. The pros and cons may be assessed as follows.

First, Japan and others have indicated that if the nuclear club is enlarged beyond the five, they may have to reconsider their non-nuclear status. However, India has in effect been a NWS for a long time: if Japan could live with the reality of Indian nuclear weapons, it should be able to live with the formality of it as well.

Second, none of the countries which acceded to the NPT on the explicit understanding that there would be only five NWS – among them Algeria, Argentina, Brazil, Japan, South Africa and South Korea – may credibly claim that their security is jeopardized by the nuclear-weapon acquisitions in South Asia. As India acquires missiles of longer range, some of them may come within their reach. Still, it would be far-fetched to argue that the formal aspect – recognition of the nuclear facts – is a factor upsetting their security calculations. States base their security policies on tangible facts, not on formalities.

However, there is a category between tangibles and formalities – political perceptions of prestige and civilizational pride – which affects security policies. For instance, deterrence relies not only on tangible facts but also on impressions of willpower. Recognition would be a sign of success and strong will on the part of those who were determined to follow through on their nuclear ambitions. In a sense, recognition would not only recognize their nuclear assets, but their assertiveness and willpower as well, leaving some other states a bit inferior in comparison.

Third, from being harshly criticized in 1998, recognition would be a relief for India. The Joint Statement clearly takes it off that hook. This should not be seen
as a concession, however: to drop a policy which did not work is no reward to others.

Fourth, does recognition bring a bonus in terms of higher status in the international system? It probably does. Nuclear weapons have not been used since 1945, but they remain attractive because they translate into power and weight in the international system. As long as they are perceived this way, they function accordingly. While today India’s nuclear programme may be invoked against a permanent seat in the UN Security Council, in the long run this argument may dissipate in favour of gross size and weight, to which its nuclear weapons contribute.

Fifth, the Joint Statement offers full access to civil nuclear technology in return for non-proliferation commitments. In the view of some, this is a win–win situation. In the view of others it is unfortunate, because it shows that you can acquire nuclear weapons and get away with it. The timing was particularly bad: indeed, the point has not been lost on Iran and others in the non-aligned movement. To the extent that it leaves the impression that, hereafter, threshold countries can move ahead to test and subsequently be recognized as NWS and in due course gain wide access to nuclear technology for civilian purposes – on the Indian precedent – the implications are negative for the cause of non-proliferation. However, no other case is quite comparable to India (Pakistan and Israel). Other states wanting to go nuclear would have to renege on their NPT commitment.

Sixth, are there other ways in which recognition of India as a NWS would encourage other states to follow suit? Could NPT members contemplating acquisition of nuclear arms prepare themselves under the umbrella of the treaty, give three months’ notice of withdrawal and then try to soften the pressure levelled on them by offering to walk in the path of India and abide by the provisions of the NPT ‘as if’ they were members?

It is important to rule this possibility out. The deal with India should be cast in a framework of intensified efforts to make the non-proliferation regime universal and further proliferation more difficult. New procedures should be devised to make it harder to leave the NPT. A variety of ideas have been aired recently (Goldblat 2005). India should be asked to participate actively in the development of such measures to ensure that an arrangement along the lines of the Joint Statement would make proliferation more, not less, difficult.

Finally, as noted above, recognition of India qua NWS would make it possible to draw it into arms-control arrangements from which it is now excluded. It could be asked to extend negative security assurances to members of nuclear weapon-free zones; a bilateral no-first-use commitment between India and Russia, on the model of an existing exchange of letters between the leaders of Russia and China containing such a commitment, might be possible; or, for that matter, a trilateral agreement to this end might be considered.

The deal has a number of specific strengths and weaknesses. The separation of civilian and military facilities and programmes – on the precedents set by the United Kingdom and France – is a fine balancing act between non-proliferation
and disarmament interests in constraining the military programme, on the one hand, and geopolitical interests in a bigger Indian arsenal to counter China, on the other. India’s acceptance of full-scope safeguards (INFCIRC/153) on civilian activities facilitates its participation in a future cut-off agreement.\textsuperscript{8} It has agreed, furthermore, to apply an additional safeguards protocol to its civilian facilities. This is welcome from the point of view of making such protocols an integral part of a new, enhanced safeguards standard. However, the Model Additional Protocol of 1997 was adopted in order better to detect undeclared activities in NNWS, so the value of this undertaking is limited.

Some years ago, the full-scope safeguards requirement for nuclear transfers was important in order to bring more countries into the NPT and NPT-type safeguards (INFCIRC/153). That objective has been fulfilled. All NNWS have joined the NPT and its safeguards system. There is nothing more to achieve by stressing the full-scope safeguards requirement. On the contrary, it is by accepting India, Pakistan and Israel as NWS that the safeguards coverage can be further extended.

Leading up to the Joint Statement, India came out in support of President Bush’s proposal of February 2004 for enhanced international efforts to constrain the proliferation of fuel-cycle facilities (White House Press Office 2004). World-class export controls were the most important thing the United States asked for, and India’s record of compliance with the rules of international nuclear commerce sheds credibility on its commitment. For the United States, this was the most important thing to institutionalize (Mohan, quoting Ashley Tellis).

The weaknesses of the deal are very much the weaknesses of US policies of arms control and disarmament. Most obviously, that goes for the test ban issue and the absence of a formal disarmament commitment. Since the United States has been looking for ways to erase its own signature of the CTBT, it has not been in the best of positions to ask India to sign. Disarmament is an empty category: the United States could not be expected to press India to undertake a commitment that the US administration itself belittles. Had India been committed in reference to Article VI, it could have been held accountable in the review process of the NPT and asked to respond to questions in other settings where nuclear disarmament is discussed, on a par with the other NWS. Today, there is no formal basis for such requests.

Neither is the plea to work for an FMCT much of a starter. The prospects for such a treaty were always dim and got even dimmer when the Bush administration stated that an FMCT would not be verifiable. In effect, India promises to work for a treaty which may never come about. In the meantime, its fissile material production can continue.

\textit{Pakistan and Israel}

The US–India agreement is part of a much broader cooperation package inspired by geopolitical considerations. In a similar spirit, China may wish to emulate it in relation to Pakistan. At some stage, the United States may itself want to do a
similar deal with Pakistan, although Islamabad has a long way to go before it can be trusted to conduct world-class export controls.

For Israel, the same kind of deal would bring no recognition/status gain as long as its policy of opacity remains unchanged, but neither does a commitment to behave ‘as if’ a member of the NPT entail any significant cost. The non-proliferation regime would gain from it, for the aim is universality, and yet another instance of special treatment for Israel should be avoided. Often criticized for being recalcitrant and arrogant, and for blocking arms control in a region that desperately needs it, the merit of it for Israel would be to soften that perception. It would be an act of goodwill.

If, in addition to ‘as if’ commitments by the three, the North Korean problem is successfully managed, the regime would to all intents and purposes be universal. The importance of universality is that it consolidates the normative strength of the treaty and the regime that it anchors. Proliferation threats would, by definition, come from inside the regime, challenges becoming matters of compliance. Universality raises the costs of non-compliance by increasing the likelihood of collective enforcement of treaty obligations.

**Managing pressures from below: nuclear terrorism**

The technical barriers to nuclear-weapon acquisition should no longer be regarded as being absolute (Potter). There is a growing consensus that in particular crude gun-type nuclear explosives are within reach also of non-state actors.

Assuming that existing weapon arsenals are well protected and that theft has not occurred – which may or may not be true – worldwide controls on plutonium and highly enriched uranium would provide effective assurances against nuclear terrorism. The logic is simple: no fissile material, no bomb, no nuclear terror (van Dassen, quoting Allison).

The most cost-effective measures are therefore steps to secure nuclear weapons and materials at the source. Important principles in this regard are: minimization, i.e. stockpile reduction, consolidation, repatriation and elimination, as well as reactor conversion making them proliferation-resistant;9 irreversibility, i.e. making minimization activities a one-way and final endeavour; and effective protection, control and accountability, making stocks of nuclear material less susceptible to diversion (Walker and Berkhout 1999: 32).

After the Cold War, provident states assisted other nations in securing, reducing and eliminating weapons of mass destruction and associated means and technologies (van Dassen). Such *ad hoc* nuclear security initiatives fill a gap between diplomacy and negotiation on the one hand, and sanctions and military action, on the other (Luongo and Hoehn 2005).

Considerable financial and political capital has been committed to such programmes, yet without any clear ordering of priorities or sense of urgency. After fifteen years of CTR activities, in Russia about half of the nuclear materials and facilities in question have now had sufficient security upgrades. For a while, the
United States carried the financial burden, and still accounts for much of what is being done. As more actors have offered assistance, the need for proper organization and coordination has grown.

UN Security Council Resolution 1540 goes a long way in addressing the threats posed by non-state actors by focusing on national responsibilities and international obligations, and criminalizing irresponsible behaviour. However, implementation varies considerably. Needs assessments along the lines of the IAEA’s International Physical Protection Advisory Service (IPPAS) may be envisioned and international assistance provided in reference to Resolution 1540. One way to close gaps would be to create model implementation systems (Monterey Nonproliferation Strategy Group 2006: 7), another to identify and display high-quality nuclear security practices and solutions. A pro-active role of the nuclear industry would be desirable, and probably in its self-interest.

Education remains an under-utilized tool for promoting nuclear security (Potter). Extended to the field of training, demanding non-proliferation obligations such as those set forth in Resolution 1540 could better be addressed. Generally, progress in arms control requires skilled personnel with in-depth knowledge of political processes as well as technical know-how. There is growing recognition among states of the need to rectify this situation.

If Article VI is taken seriously and nuclear disarmament progresses, sooner or later the entire nuclear-weapon sector will have to be addressed. For in a nuclear weapon-free world, all materials and infrastructure dedicated to military use would have to be eliminated. Otherwise, one would be left with a number of threshold states, and that is not the intention. Such a comprehensive approach is needed also to capture the risk of catastrophic terrorism and institute more effective measures to avert it.

In hardware terms, the military sector consists of operational weapons; weapons held in reserve; weapons that have been withdrawn and are awaiting dismantlement; and weapons-grade materials. So far, arms control and disarmament agreements have dealt with the front end, i.e. operational weapon systems. When these weapons were significantly reduced after the Cold War, weapons and materials were passed down the chain to the other categories, the end station being surplus fissile materials. This process continues both in Russia and the United States.

Cooperative Threat Reduction (CTR) programmes deal with weapons in excess of military needs as well as dangerous remnants at the end of the cycle. They are flexible, and may provide quick and effective solutions to immediate challenges. The NPT and its safeguards system offer much less flexibility and fewer options for swift responses. On the other hand, arms-control agreements provide a much-needed degree of predictability and robustness in times of political turbulence (Mærli 2005). CTR programmes address proliferation in non-state as well as state paradigms, taking precautionary measures at the source. The challenge is therefore to see how these approaches can be further developed and integrated into a unified, broad approach covering the entire nuclear-weapon sector.
Policies of supply and demand

Supply-side approaches

To promote peaceful utilizations of nuclear energy while preventing military uses of the atom, supply-side restraints have been imposed on the transfer of nuclear materials, equipment and technology. In 1971, the Zangger committee was established to operationalize the NPT export control provision contained in Article III.2, and in 1975 the Nuclear Suppliers Group (NSG) was established following India’s nuclear explosion the year before, setting out to control the export of dual-use items. The NSG – a self-appointed group of supplier states originally referred to as the London club, holding secret discussions in London – drew resentment right from the beginning. Critics recommended, instead, the negotiation of mutually agreed rules of international nuclear commerce between suppliers and recipients. These diverging approaches have existed ever since, and been further accentuated recently.

Technology restraints may still be clarified, improved and consolidated. For instance, there are proposals for a division of labour between the Zangger Committee and the NSG, Zangger staying with nuclear items (especially designed or prepared (EDP) items) and the NSG with the dual-use list; for linking export control information with the IAEA verification system – current practices lack systematicity; and for negotiating a global export control convention to strengthen the standards and promote their universality and legitimacy. Clearly, there is merit to moves that can shore up present arrangements along such lines. However, the main agenda of the future should take a different tack at the problems, moving to a negotiated set of regulations that would be more legitimate, comprehensive and universal than supplier restraints can ever be (Rauf).

In a much noted article published in the autumn of 2003, Mohamed ElBaradei proposed a sequence of measures, since refined and followed up, which represent a constructive agenda for further inquiry and action. The elements are: assurances of supply (of fuel) and access (to equipment and technology); a moratorium on new national fuel-cycle facilities; restricting enrichment and reprocessing operations to facilities under multinational control; investments in new proliferation-resistant nuclear energy systems; and multinational approaches to the management and disposal of spent fuel and radioactive waste (ElBaradei 2003). The High Level Panel on Threats, Challenges and Change supported many of these measures (United Nations 2004). So did Kofi Annan’s report In Larger Freedom (Annan 2005).

This agenda is based on the assumption that further denial of technology holds little prospect of success, particularly so because nuclear power is back in high demand and because Article IV was deliberately written to preclude attempts to reinterpret the NPT in ways that would make peaceful utilizations more difficult. Better, then, to attempt a formal, multilaterally negotiated, international convention that can provide both assurances of non-proliferation and assurances of supply and access (Rauf).
An important move would be to link NWS declarations of excess fissile material to a future fuel bank. A revitalization of the Trilateral Initiative could be a major step in this direction, not only to help establish a fuel bank of some size, but also to commit the United States and Russia to a measure of nuclear disarmament. Without some significant progress on the nuclear disarmament front, it is actually doubtful whether a supply/restraint convention can be agreed, for in the eyes of many recipients the restraints on technology are likely to weigh more heavily than the assurances of supply.

To have a fair chance of success, multilateral fuel-cycle arrangements must be credible both in terms of availability (enough) and reliability (uninterrupted supplies). Today, all the big powers which do not have enough oil and gas domestically – only Russia has – are competing for supplies worldwide, trying to distribute their dependence on as many suppliers as possible, and to reduce their reliance on the most unpredictable ones (in the Middle East). In contemporary international affairs, geopolitics is first of all about energy supplies and energy security. Similar considerations apply in the field of nuclear energy: states planning new large investments in nuclear power plants would like to minimize the risk of interruptions in supply and services. Recent developments in world energy markets have made them intensely aware of the importance of doing so. The question is whether multinational arrangements can be made reliable enough to forgo the extra costs and challenges of national facilities.10

Proposals for enhanced supply-side constraints on fuel-cycle transfers, limiting such facilities to those who operate them today, create another divide between ‘haves’ and ‘have-nots’. Multilateral fuel-cycle arrangements avoid further deepening of that divide, and are therefore more widely acceptable. Still, the hard cases – states of particular proliferation concern – may simply choose to abstain.

Civilian power programmes started out as spin-offs of military programmes. No serious attempts were made to develop proliferation-resistant technologies. Interest in such technologies emerged much later. By now, however, there has been much technical progress in this regard, including ways in which multilateral arrangements can be organized so that sensitive technologies would not proliferate to other partners. Inspired by the case of Iran, innovative designs have been suggested to prevent technology transfers to a multilateral enrichment plant from falling into the hands of the host country (Jane’s Intelligence Review 2006).

**Demand-side approaches**

The International Nuclear Fuel Cycle Evaluation (INFCE) argued that, beyond the turn of the century, policies of technology restraint would no longer be effective in halting the proliferation of nuclear arms (INFCE 1980). Technologies for production of fissile materials and nuclear weapons would be too widely disseminated for such measures to have much of an impact. The evaluation
therefore recommended a change of emphasis from the supply to the demand side, addressing the motives for acquisition of nuclear arms.

Restraints on technology transfers still make sense. Indeed, establishing a stronger firewall between civilian and military uses of nuclear energy must be a high priority. The world is too turbulent, and the insecurities too widespread, to allow this distinction to boil down to matters of intent. To stake it all on verification arrangements will not be good enough.

However, the A.Q. Khan network was a stark illustration of the problems also in controlling technology transfers: contributors from more than thirty countries on four continents sustained a secret network nurtured from within the nuclear programme of a NWS, escaping the attention of the export control regime for two decades (Rauf). So long as the demand side is dynamic, technology denial can be effective only to a degree.

Removing motives

While policies of technology denial are more comprehensive than ever, little is done to remove the motives for nuclear proliferation. The overall approach has become severely lopsided for lack of constructive demand-side policies.

All nuclear-weapon programmes have been motivated by national security concerns. To eliminate the weapons, conflict resolution is therefore of the essence. Some programmes have also been motivated by status considerations. Possession of nuclear weapons tends to enhance the rank and influence of states in international affairs.

In the Middle East, South Asia and North East Asia, the security motives are all too obvious. In the Middle East, elimination of Israeli nuclear weapons can be the fruit only of a reliable regional peace arrangement. Under current circumstances, asking Israel to become a non-nuclear member of the NPT is a waste of time. In South Asia, the long-term prospects for confidence-building are poor so long as the Kashmir conflict remains unresolved. The European experience with confidence and security-building measures clearly suggests that such measures will not succeed unless the parties abandon all plans to change the political status quo by military means. In South Asia, the parties have not done so. In North East Asia, the regional security concerns about North Korea blend with the global policies of the United States. However, here too the end point is regional: a united, non-nuclear Korea.

In these proliferation-prone regions, elimination of nuclear arms obviously depends on the elimination of war as a means of solving inter-state disputes. The Russell–Einstein Manifesto had it right: in order to get rid of nuclear weapons and avoid nuclear war, war itself must be renounced. And not any war, but especially inter-state war, as domestic warfare has not so far inspired the acquisition and use of nuclear arms.

Already in 1991, after the first Gulf War, nuclear weapons were widely seen as the only possible equalizer to US superiority in conventional arms, i.e. the only type of weapon within reach that could deter the United States from
attacking. Why, then, has the United States not taken the lead in eliminating nuclear weapons altogether? In a nuclear weapon-free world, the United States would arguably be even more superior than it is today.

The answer seems to reside in the fact that nuclear weapons remain the oligopoly of a few; that they instil awe and respect in the minds of others; and that generally, the United States can stay on top of all military dimensions without having to make any trade-offs. Thus the guiding perspective of the ballistic missile defence programme seems to be to expand the range of military options by enhancing the effectiveness of the offensive forces while reducing the fear of retaliation against US and allied territory. ‘If you have a shield, it is easier to use the sword’.12 Exercised or not, a wider range of options are important in themselves.13

The case of Iran demonstrates that mastery of nuclear technology remains a matter of prestige and status. Inter alia for reasons of civilizational pride, Iranians are closing ranks in defence of a programme that covers the entire fuel cycle. Advanced nuclear capabilities, with an in-built weapons option, translate into higher status in the international system and enhanced leverage throughout the Middle East. Other states are increasingly concerned that Iran may not be a status quo power.

Security concerns can be analysed in reference to contending actors and their interests and capabilities. Status considerations are intangibles. While policies to alleviate security motives can be discussed in concrete terms, policies to remove status ambitions are harder to elaborate, yet important for the cause of nuclear disarmament.

Regional arrangements: consolidating decisions to cooperate

Successful negotiation of NWFZs has been predicated on the absence of fundamental political and security conflicts among the parties, reflecting the fact that arms control is not a way of resolving basic political-security conflicts, but rather a means to operationalize and consolidate political decisions to cooperate in the interest of security and stability (Miller and Scheinman). In the Middle East and North East Asia, zonal proposals can progress only in close conjunction with political progress in resolving regional conflicts. Given the prevailing conditions in these regions, achievement of NWFZs is a long-term prospect at best. However, because of the vexing challenges from North Korea and Iran, discussions about steps in that direction should proceed as a matter of urgency.

Security Council Resolution 687 (the cease-fire resolution for Iraq) explicitly linked the disarmament of Iraq to the establishment of a zone free of weapons of mass destruction in the Middle East. The zone would prohibit acquisition of nuclear weapons, production of weapons-usable nuclear material and development of sub-systems or components related to weapons or weapons-usable material. No new enrichment and reprocessing plants could be established in the region except on a multilateral basis, and all current production of weapons-usable materials would be terminated. In this region, the firewall would have to be thicker than usual.
In the first half of the 1990s, the Arms Control and Regional Security working group of the Madrid peace process made significant progress on confidence-building issues, but broke down because of disagreements – primarily between Israel and Egypt – about how to handle the nuclear issue. To move the zonal issue forward, a dialogue between the parties in the region, led by Egypt and Israel and with the strong support of other countries, particularly the United States, needs to be initiated. Such a dialogue must address the technical and institutional aspects of such arrangements, the verification provisions not least (Miller and Scheinman).

In their threat assessments, states look for signs of weaponization of the nuclear assets of potential adversaries. This is especially so in the Middle East and North East Asia, where suspicions and security concerns run deep. Therefore, it is commonly recognized that the verification requirements will have to be particularly strict. Weaponization is the process by which a state uses fissile materials to build a nuclear explosive device capable of being delivered to a target in another state. It is obviously prohibited by the NPT, but the IAEA has no authority to search for it.

The question is further complicated by the fact that weaponization involves dual-use items. Still, are there components and activities that can provide unambiguous indications that weaponization is under way (Simpson 2006)? Efforts to identify what is unique to this process, reviewing export-control lists and other sources to assess the feasibility of an international mechanism to detect nuclear weaponization, are of particular relevance and importance for zonal considerations in the Middle East and North East Asia.

Reconfirming the basics

For many years, nuclear arms-control arrangements revolved around two treaties: the Anti-ballistic Missile (ABM) Treaty and the NPT. The ABM Treaty is gone, and the NPT is under severe pressure. It may not survive another setback at the review conference in 2010.

If that conference fails, it is conceivable that members of NWFZs (members of the non-aligned movement) may leave the treaty, protesting at the growing imbalance in rights and obligations. In itself this would not be of any great concern since those states would remain under an international legal obligation to stay non-nuclear, and still be subject to IAEA safeguards. However, if a few states leave, many others may follow suit, in which case the legitimacy of the NPT would be so seriously undermined that it would almost certainly come to an end. North Korea has left already, and Iran may do the same if more sanctions are imposed on it.

There is a need, therefore, to reconfirm the basics of the treaty. These are first of all the balance that was struck between its three pillars – non-proliferation, disarmament and peaceful uses – and the operative meaning of ‘cessation of the nuclear arms race at an early date’ of Article VI. This wording was always taken to mean a CTBT and an FMCT. Another element of the regime, much
emphasized from the beginning of NPT negotiations, is security assurances for NNWS.\textsuperscript{14} Furthermore, it should be recalled that Article IV was carefully drafted to avoid any detraction from the right to access nuclear technology for peaceful purposes, the only qualification being that transactions must be in conformity with Articles I and II, precluding acquisition for weapons purposes. Limitations on commerce in fuel-cycle technologies must therefore be seen in conjunction with other measures in order to maintain the overall balance of rights and obligations.

To save the NPT, Harald Müller argues, first, that the CTBT will have to take effect and be accompanied by a NWS undertaking not to develop or deploy any qualitatively new type of nuclear weapons. Second, a verifiable FMCT must be negotiated, possibly together with a set of NWS declarations saying that national holdings will not surpass certain specified levels. Third, the United States and Russia – which account for more than 90 per cent of total arsenals – should undertake to reduce existing stockpiles by transferring significant amounts of fissile materials to civilian uses. Fourth, the 1995 Security Council Resolution on security assurances should be reconfirmed and national strategy documents brought in line with it. Today, some of the national nuclear posture documents are at variance with the resolution. Fifth, space weapons should be prohibited, and limits agreed on missile defence systems (Müller 2006). Finally, the phrases ‘not to transfer to any recipient whatsoever’ of Article I and ‘not to receive . . . from any transferor whatsoever’ of Article II, which apply to non-state as well as state actors, have their own disarmament agenda to avert nuclear terrorism, such as elimination of HEU and dismantlement of tactical nuclear weapons without electronic locks. This is yet another important matter for urgent action.

This list may seem overly ambitious. However, it amounts to no more than a capping of nuclear arsenals – ‘cessation of the nuclear arms race’ – at long last. Except for reductions in US and Russian stockpiles of fissile materials, which is widely considered to be an integral part of an FMCT, it does not require disarmament in the literal sense of the term. It falls short of NAM demands for a nuclear-weapon convention, a timetable for nuclear disarmament to zero and an international convention on security assurances. Yet it may be enough to maintain the integrity of the NPT.

Of particular concern in this connection is that before 2010, the United Kingdom will make a decision about a successor to Trident. If it decides to replace the submarine-based Trident system with a modernized version of similar size, extending the technical lifetime of the nuclear deterrent to 2070 or so, this will have a distinctly negative impact on the 2010 review conference. Europe has become a pacific region; Germany faces no external military threat from any of its neighbours, which is historically unique; and neither does the United Kingdom. Should it nevertheless go for near full-scale replacement of Trident, a great many countries may table an equally if not better justified rationale for nuclear weapons.

Concretely, it is proposed that in the autumn of 2009 – mid-way between the inauguration of a new US president and the 2010 review conference – a UN
summit meeting should be called to confirm the basics of the NPT. The summit would not necessarily be confined to non-proliferation and disarmament, but should be prepared and convened with special reference to these issues. Neither would it have to address all the items mentioned above: confirmation of the validity of the three pillars along with some measures to effectively cap nuclear arsenals would be enough to justify the meeting. The proposal is offered in the belief that policies of exceptionalism, unilateralism and coalitions of the willing may soon be modified in favour of multilaterally negotiated international agreements – of which the NPT occupies the centre-stage.

The UN Secretary General may draw the Security Council’s attention to matters threatening international peace and security (Article 99 of the Charter). As the survival of the NPT can no longer be taken for granted, the Secretary General has good reason to alert the Security Council to the risks involved. Article 99 has been a ‘sleeping’ provision – relations between the Secretary General and the Council have been of an informal nature – but a Secretary General from the Korean peninsula may be personally motivated to bring the matter to the Council’s explicit attention.

If the Seven Nation Initiative so agrees, it could offer to be ‘friends of the Secretary General’ on this matter. Established on the initiative of Kofi Annan, it consists of Norway, the United Kingdom, Romania, Chile, Mexico, South Africa, Australia and Indonesia. Having a leg into all UN regional groups, the Seven Nation Initiative is well positioned to exercise this function. Naturally, it should play a role in setting and implementing the agenda of the meeting.

Of course, a UN Summit may be decided and convened in other ways. This is just one of them. The essence of the proposal is that for all those who are genuinely concerned about the future of the NPT, a reasonable mid-term objective would be to convene a Summit meeting in the autumn of 2009 to reconfirm the basics of the bargain that was struck in the second half of the 1960s and to avoid another review failure in 2010.

**Realigning the United States and the non-proliferation regime**

Two elements of US policy are glaringly incompatible with the international non-proliferation regime: the policy of regime change, and the propensity to act as if Article VI did not exist.

As long as the United States pursues a policy of regime change, there can be no agreed strategy for non-proliferation and disarmament. There can be only select areas of cooperation. North Korea and Iran illustrate the point. For many years, the United States has threatened the regimes there; they have responded by intensifying their nuclear programmes; whereupon the United States has used the nuclear build-up to strengthen its own case against the regimes. Regime change becomes a proliferation-driver. Under such conditions, the prospects for negotiations are slim: when one side makes it clear that the prime objective is to cut the throat of the other, the other side has little incentive to negotiate. While
the non-proliferation regime is part and parcel of international law, the policy of regime change – by use of force, if necessary, as in Iraq – has no such basis.

Requirement number one must therefore be for the United States to abandon its policy of regime change so that once again agreement is forged on nuclear weapons as the unit of account. Only then can there be a common strategy to achieve the objectives of the NPT.

The neglect of the United States and other NWS of the obligation to disarm is equally detrimental. It blocks progress on a range of important non-proliferation issues and spells breakdown for the regime in the long run. For a while, the New Agenda Coalition took the lead on disarmament issues but split during the 2005 NPT Review. In the run-up to the 2005 UN summit, the leadership function was passed on to the Seven Nation Initiative. Requirement number two is therefore to make maximum use of coalitions of states to commit the nuclear powers to measures that may effectively cap the nuclear arsenals, and lead on to nuclear disarmament.

Regime change is an objective that may come and go with changing US administrations. Counter-proliferation – in some form or other – is more likely to stay. Likewise with the notions of exceptionalism and unilateralism: the idea that there could be exceptional rules for the exceptionally strong – in high currency immediately after the occupation of Iraq – may be out, while unilateralism will endure. Unilateralism and counter-proliferation may change with changing administrations – there may be more or less of it – but the changes are likely to be variations of one and the same theme. For these policies are structural, deriving from the superior status of the United States in world affairs – from its military strength in particular – and therefore unlikely to go away any time soon. The non-proliferation regime will have to coexist with these elements of US policy.

Counter-proliferation and non-proliferation policies may be incompatible. When the IAEA reports a case of non-compliance to the Security Council, agreement on counter-proliferation action is not excluded – on questions of international peace and security the Council is free to decide; there is nobody above it – but it is unlikely to happen. Such action is more likely to be taken unilaterally or by coalitions of the willing and be conducted in defiance of the regime. For instance, bombing of nuclear facilities in Iran would be a violation of international law, for it could not be justified as an act of self-defence in reference to Article 51 of the UN Charter, and the Security Council will not authorize it.

On the other hand, by extending credible threats of the use of force, US counter-proliferation policy may be a useful supplement to the non-proliferation regime. Such threats can have a deterrent effect which the international regime has little or no prospect of providing. Deterrence does not address the root causes of proliferation, and in that sense does not solve the problems, but it can affect the balance of incentives in favour of staying non-nuclear. For instance, a would-be proliferator may defer a decision to go nuclear, or refrain from weaponizing its programme and seek political solutions to security concerns instead.
For threats to be credible, there has to be a capability and a will to implement them. Actual use of force in a counter-proliferation mode may, however, do more harm than good. Closer examination of the Israeli bombing of Osiraq in 1981 shows that it hastened rather than retarded Iraq’s nuclear programme: it was after the bombing that Saddam was able to mobilize his human and material resources behind a secret weapons programme based on uranium enrichment. In Iran, the effect of bombing might be similar: Iran would leave the NPT, refuse inspections, be free to pursue a nuclear-weapons programme in secret and probably also be more motivated to do so. Bombing would set the nuclear programme back, but in the long run it is more likely to become part of the problem than of the solution. Therefore, the relationship between counter-proliferation and non-proliferation is ambiguous and complex: counter-proliferation threats may supplement the regime in the best interests of non-proliferation, while actual use of force may undermine the same objective.

Against non-state actors, collective action is more easily agreed. Security Council Resolution 1540, dealing with measures to be taken against non-state proliferators, was passed by consensus under Chapter VII of the UN Charter. For the great majority of states, violent non-state actors are ‘hair in the soup’. Usually dubbed terrorists, they tend to be resolutely addressed, including by the use of force if needed and at all possible.

To enhance the enforcement mechanism of the non-proliferation regime, a list of agreed responses to possible violations, proportionate to the offences, could be drawn up including diplomatic, financial, economic and other measures (Goldblat). The responses would have to be graduated from mild to severe, so as to increase pressure on the violator over time and press him to mend his ways. The conditions for transition from one response to another would have to be spelled out. The mere existence of a list of predetermined sanctions would have a deterrent effect and reduce the probability of violation.

**Conclusion**

In conclusion, the following steps are essential to re-establish common ground and strengthen the non-proliferation regime:

- Reject policies of regime change and recreate agreement on nuclear weapons as the units of account.
- Pursue arms control measures, however modest, while working to change current mindsets to make more substantial steps possible. Enhance coalitions of like-minded states to take the lead on disarmament issues.
- Call another UN summit meeting in the autumn of 2009 to reconfirm the validity of the non-proliferation/disarmament/peaceful utilization bargain; initiate measures to cap nuclear arsenals; and pave the way for a successful review conference in 2010.
- Lean on the United States and Iran to engage each other directly in order to negotiate a political solution to the nuclear controversy. Encourage the
United States and North Korea to do the same. Barring a convincing change of mindsets, seek a regional North East Asian solution on the basis of the denuclearization agreement between the two Korean states of 1992.

- Draw non-NPT members – India, Pakistan and Israel – closer to the NPT by committing them to behave ‘as if’ they were members of the treaty.
- Secure nuclear weapons and materials at the source; assist states in implementing Security Council Resolution 1540; and provide non-proliferation training to reduce the risk of nuclear terrorism.
- Negotiate agreed supplier–recipient rules of international nuclear commerce; establish a clearer physical divide between civilian and military uses of nuclear energy; enhance international safeguards; and tighten the conditions of withdrawal from the NPT.
- Give more emphasis to demand-side policies addressing security concerns and status considerations. Pay more attention to regional conflict resolution, and promote concrete steps towards a zone free of weapons of mass destruction in the Middle East.
- Exploit potential synergies between non-proliferation and counter-proliferation policies. Strengthen the enforcement mechanisms of the non-proliferation regime by developing agreed responses tailored to different degrees of violations.
- Promote nuclear disarmament and non-proliferation education with a view to change mindsets and forge norms consistent with formal national obligations to disarmament and non-proliferation.

Notes

1 References to other chapters in this volume are made by insertion of authors’ names, in parenthesis.
3 Ideas aired by Ambassadors Ludeking (Germany) and Meyers (Canada) at the Monterrey Institute’s Non-proliferation Strategy Group Meeting, Washington, DC, 28–29 April 2006.
4 ‘De-alerting’ should be understood as measures that substantially increase to hours or days the time required to launch nuclear weapons in the active operational forces. ‘Deactivation’ means that weapons are unusable for weeks or months (Feiveson 1999: 15).
5 In 2005, an IAEA expert group reported on the problems and possibilities of multinational fuel-cycle arrangements. Two of the options identified by the group are based on the notion of shared ownership or control, promoting multinational arrangements with the participation of other states, nuclear and non-nuclear, as confidence-building measures. Upon taking office, President Ahmadinejad entertained the same idea, proposing that public and private companies might be involved in the sensitive parts of Iran’s nuclear programme. A number of technical fixes could significantly enhance the proliferation resistance of multinational arrangements (*Jane’s Intelligence Review* 2006).
A cut-off agreement requiring that in the NWS, safeguards would apply only to reprocessing and enrichment plants, would introduce another element of discrimination into the non-proliferation regime. On the one hand, there would be the NNWS, required to put all their activities under safeguards, and on the other, the NWS which should be trusted not to divert nuclear material from their unsafeguarded civilian reactors, fuel fabrication plants etc. To avoid yet another differential treatment in favour of the NWS, all civilian activities should be placed under safeguards also in these countries (Fischer 1994).

Low enriched uranium (LEU) may serve as a substitute for most, if not all, of the non-explosive applications in which HEU is currently used. Conversion, moreover, is possible in most instances and current conversion programmes have been quite successful. There seems to be little or no reason for using HEU in future civilian applications.

The offer of the E-3/EU to Iran is interesting in this respect. The suggested fuel supply arrangement was well crafted both in terms of availability and reliability (Lodgaard).

President Nixon when signing the ABM Treaty in 1972.

Another interpretation of US politics in the mid-1990s, when eminent military experts actually recommended nuclear abolition, is that the domestic interests in nuclear weapons were too well entrenched and the political inertia too strong to let such a radical reorientation happen.


References


References


Australia, New Zealand (2005) Working paper on article X (NPT withdrawal) submitted
References


References


Claude, Patrice (2004) ‘My Father is a Visionary, not King or President’, Guardian.


References


References


Fortelle, H. de la (2002) Statement by Ambassador Hubert de la Fortelle, to the First


Hayes, P. (1991) ‘North Korea’s Nuclear Capabilities and Intentions’, trip report to North and South Korea (mimeo), Nautilus Institute, October.


Hussain, N. (2005) Statement by Director General (Disarmament), Pakistan, Ministry of Foreign Affairs, on the physical protection of nuclear materials during the IPRI–NUPI Roundtable, March.


‘India and Pakistan Agree to have a Dedicated Fiber Optic Link for Nuclear Risk Reduction’ (2005), Dawn (Karachi), 18 August.


References

Agreement in the Islamic Republic of Iran, resolution by the Board of Governors, GOV/2005/77, 24 September.


International Atomic Energy Agency (2006b) Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran, report by the Director General, GOV/2006/27, 28 April, Vienna: IAEA.

International Atomic Energy Agency (2006c) Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran, report by the Director General, GOV/2006/38, 8 June, Vienna: IAEA.


References


References


Lahore MoU (1999) Memorandum of Understanding signed by the Indian Foreign Secretary, Mr K. Raghunath, and the Pakistan Foreign Secretary, Mr Shamshad Ahmad, in Lahore on 21 February, www.indianembassy.org/South_Asia/Pakistan/mou(lahore01211999).html (accessed 27 September 2006).


References


References


References


Model Protocol additional to the Agreement(s) between state(s) and the International Atomic Energy Agency for the Application of Safeguards (1998) [‘93+2’ protocol on enhanced safeguards], INFCIRC 540.


Own, A.A. (2005) Statement by His Excellency A.A. Own during the General Debate of the 2005 NPT Review Conference (transcript made at PRIF from the tape of the English translation, through UN DDA).


Asia and the Nuclear Future, Center for International Security and Cooperation, Stanford University, 4–5 June.


References

References


References


References


Index

Acheson–Lilienthal Report 269
Adamov, Yeveniy 230
Agreed Framework 36, 123, 125–8, 132, 136, 302–3
al-Qaeda 3, 40, 197, 199, 200, 203, 211
Albright, Madeleine 127
americium 14
Anti-ballistic Missile Treaty (ABM) xxi, 32–3, 37, 41–2, 47–8, 57–8, 60, 117, 188, 217, 237, 294, 313, 319
Argentine–Brazil Agency for Accounting and Control of Nuclear Materials (ABACC) xxi, 149
Arms Control and Regional Security (ACRS) xxi, 145, 313
Aspin, Les 34, 37, 41–2, 255
assurance of supply 271, 282–4, 286; see also Committee on Assurances of Supply
Atoms for Peace 34, 49, 269, 271
‘Axis of Evil’ 42, 81, 89, 113, 131, 294
B61 bomb 224
Baker, James 254
ballistic missile defence 33, 191, 312
Baruch Plan 236, 269, 271, 289
Bhutto, Zulfikar Ali 173–4
biological weapons 28, 37, 137, 146, 151, 178, 208, 279
Biological Weapons Convention (BWC) xxi, 45, 138, 142, 150, 239
black market 13, 198, 211, 272
Blair, Tony 80, 87
Blix, Hans 121–2, 124–5
Bolton, John 81, 87, 89, 95
Bottom-up Review 33, 37
Brussels Treaty 10, 232
Bush, George H.W. 38–9, 121–2, 236, 301
Bushehr 96–7, 107–8, 110
Carter, Ashton B. 38–9, 49, 66
Central Intelligence Agency (CIA) xxi, 77, 84, 120, 135, 186, 201
Chemical Weapons Convention (CWC) xxi, 45, 80, 138, 142, 150, 279
Cheney, Richard B. 34, 95, 105
Chernobyl 100, 259
China–Iran–Russia triangle 109
Chirac, Jacques 77, 221
Clinton, William Jefferson 32–5, 37, 40, 49, 69, 85, 92, 121–3, 126–8, 158–9, 171, 176, 217–18, 221, 229, 232, 236, 294, 302
Coalition to Reduce Nuclear Dangers 218
Committee on Assurances of Supply (CAS) xxi, 272
Comprehensive Nuclear Test Ban Treaty (CTBT) xxi, 11, 19, 22, 47, 58, 60, 80, 154, 157–9, 176, 188–9, 215–34, 237, 244, 265, 293–4, 306, 313–14
Comprehensive Test Ban Treaty Organization (CTBTO) xxi, 226, 232
Conference of the Committee on Disarmament (CCD) xxi, 31
Conference on Disarmament (CD) xxi, 27, 46, 58, 217, 224–5, 234, 236–8, 243–4, 250, 299
Confidence- and security-building measures (CSBM) 145, 311
Convention for the Suppression of
Unlawful Acts Against the Safety of Maritime Navigation 17

Cooperative Threat Reduction (CTR) 245–6, 250, 253, 255–6, 261, 295, 307–8

Cordesman, Anthony 83, 192

counter-proliferation 1, 2, 4, 16, 32, 34–5, 37–8, 41–6, 49, 94, 194, 249, 294, 316–17; Counter-proliferation Initiative (CPI) xxi, 33–5, 37–41, 294

de-alerting 58, 156, 299, 318
de Klerk, Fredrik Willem 2

Demilitarized Zone (DMZ) xxi, 135

Dhanapala, Jayantha 66

Dimona 142–3, 301
down-blending 207

Drennan, William M. 36
dual-use items 269, 276, 280, 309, 313

early warning 191

Eighteen-Nation Disarmament Committee (ENDC) xxi, 10, 31

Eisenhower, Dwight D. 34, 215, 236, 271

ElBaradei, Mohamed 186, 196, 270, 280, 284, 290, 309

entry into force (EIF) xxi, 15, 19, 21, 55, 58, 60, 195, 216–21, 228, 230–1, 233, 242–3, 269

EU Strategy Against Weapons of Mass Destruction 258

European Atomic Energy Community (Euratom) xxi, 247, 256–7, 260, 269

European Bank for Reconstruction and Development (EBRD) xxi, 254–5, 260

exceptionalism 3, 139, 152–4, 315–16

excess fissile material 59, 310

Exclusive Economic Zone (EEZ) xxi, 16, 17

Expert Group on International Plutonium Storage (IPS) xxii, 13, 272

Federal Agency for Atomic Energy (FAAE) 257

first use 38, 54, 135, 178, 180, 185


fission 151, 218–19, 250

fission products 12, 151

Franck Report 269, 289

fuel bank 271, 284, 286, 310

fuel leasing 284

fuel repatriation 248

fusion 219, 222, 229, 232, 250

G-8 Global Partnership 207, 210, 245

Gaddafi, Muammar 75–8, 80–5, 87–93, 95
gas centrifuge 107, 117, 196
general and complete disarmament 19, 20, 22, 31, 51–2

Geneva Conference on the Peaceful Uses of Nuclear Energy 269

Genscher, Hans-Dietrich 254

Glenn Amendment 176

Global Nuclear Energy Partnership (GNEP) xxi, 285

Global Threat Reduction Initiative (GTRI) xxii, 207, 245, 257

Gorbachev, Mikhail 236, 254, 298

Gosatomnadzor (GAN) 257

guidelines for nuclear transfers (NSG Guidelines) 35, 167, 190, 274–7, 303

gun-type device 202–3

Haq, Zia-ul- 174

Hart, Gary 88

heavy water 1, 97, 100, 107, 116

Helms, Jesse 217

hexafluoride 97, 106, 109, 174

Hezbollah 140

high alert 28

highly enriched uranium (HEU) xxi, 12, 80, 136, 185, 198, 201–3, 206–8, 212, 240, 243, 247–8, 250, 255, 265, 284, 307, 314, 319

Hiroshima 1, 139, 202, 250

Hobbs, Marian 47

hydro-acoustic stations 226

hydrodynamic experiments 223

hydrogen bomb 219

hydronuclear experiments 223, 232

illicit nuclear trafficking 46, 198–9, 203; IAEA Illicit Trafficking Database xxii, 265; Khan network 44, 78–9, 97–8, 113, 185, 197–8, 210, 302, 311

improvised nuclear device (IND) 194, 200–3, 205–7

Indian nuclear doctrine 156

inertial confinement fusion (ICF) xxii, 222–4, 229, 232

Index

‘innocent passage’ 16
inspections: ad hoc 36; comprehensive 80; international 101, 263; intrusive 124, 239; nuclear 119; on-site 143, 225–8, 242; regular 240; routine 149; special 36, 122–5, 130, 149
intercontinental ballistic missile (ICBM) xxii, 34
interdiction 16, 44–5, 48, 162
intermediate-range nuclear forces (INF) xxii, 28, 92
International Court of Justice (ICJ) xxii, 20, 56–8, 62, 68–9, 91
International Data Centre (IDC) xxii, 226, 228
International Monitoring System (IMS) xxii, 225–8, 232
International Nuclear Fuel Cycle Evaluation (INFCE) xxii, 272, 310
International Physical Protection Advisory Service (IPPAS) 308
International Plutonium Guidelines 250
international plutonium storage (IPS) xxii, 13
International Science and Technology Centre (ISTC) xxii, 254, 265
irreversibility 58, 234, 246, 307
Islamic Jihad 140
isotope separation 12
Johnson, Rebecca 62, 67–8, 250
Joint Declaration on the Denuclearization of the Korean Peninsula 36

Kahuta Research Laboratories 173
Kargil crisis 168
Kashmir 168–70, 172, 174–5, 190, 192, 311
Kelly, James 128, 136
Khan, Abdul Quadeer 42, 116, 174, 185–7, 192–3, 195–8, 210, 242, 273, 302; Khan network 44, 78–9, 97–8, 113, 185, 197–8, 210, 302, 311
Khan, Dera Ghazi 174
Kim Il Sung 36–7, 124–5, 129, 133, 136
Kim Jong Il 127–8, 131, 133, 135
Kim Yong Sun 121, 131–3, 135–6
Kola Peninsula 259
Korean Peninsula Energy Development Organization (KEDO) xxii, 126

Lahore Memorandum of Understanding (MoU) xxii, 168–9
Lake, Anthony 33, 40
Lewis, Patricia 68
lithium-6 143
Lockerbie 76–7, 84, 86–9, 92, 94
London Club 195, 309
low-enriched uranium (LEU) xxii, 12, 207, 248, 255, 286, 319
Lugar, Richard 255

Madrid Middle East Peace Conference 145
Manhattan Project 268
maraging steel 79, 97, 198
maritime transfer 17
material protection, control and accounting (MPCA) xxii, 201, 207, 209, 256, 261
Mega tons to Megawatts 255, 265
MI6 77
Middle Powers Initiative 62–3
Mikhailov, Viktor 230
Minatom 257
minimum deterrence 156, 179, 190, 192
‘mini-nukes’ 206
Missile Defence Act 32–4
Missile Technology Control Regime (MTCR) xxii, 80, 108–9, 167, 190
moratorium on fissile material production 159, 167, 239
moratorium on nuclear tests 58, 159
Mubarak, Hosni 137, 144
multilateral approaches to the nuclear fuel cycle 268, 277, 282, 288–90
multilateral export control 160, 275, 280, 282
Multilateral Nuclear Arrangements (MNA) 267, 284, 289
multilateralism 3
Musharraf, Pervez 42, 44, 169, 179, 197
mutual deterrence 4
Myrdal, Alva 31

Nagasaki 1, 250
Natanz 97, 104, 185
National Academy of Sciences 34
National Command Authority (NCA) xxii, 180, 182–3, 192
National Ignition Facility (NIF) 223–4
National Missile Defence 33–4, 191, 237
National Council of Resistance in Iran (NCRI) xxii, 97, 116
National Strategy to Combat Weapons of Mass Destruction 42, 44
national technical means (NTM) xxii, 227–8
naval nuclear fuel 250
Nehru, Jawaharlal 167, 216
neptunium 14
New Agenda Coalition (NAC) xxii, 57, 62, 69, 316
Next Steps in Strategic Partnership (NSSP) xxii, 161, 166
Nidal, Abu 77
no-first-use (NFU) xxii, 28, 155–6, 158, 161, 177–8, 299, 300, 305
Nolan, Janne E. 38
Non-aligned Movement (NAM) xxii, 47, 62–3, 104, 305, 313–14
non-compliance 12, 23, 26, 46, 62, 99, 107, 112, 121–2, 126, 130, 150, 226, 239, 249, 268, 294, 307, 316
non-proliferation assistance 252–5, 258–65
non-proliferation education 210–11, 318
non-proliferation norm 4, 152, 278, 287
non-strategic nuclear weapons 58, 298
North Atlantic Treaty Organization (NATO) xxii, 3, 11, 13, 49, 84, 117, 228, 233
NPT see Treaty on the Non-proliferation of Nuclear Weapons
nth nation problem 31
nuclear apartheid 160
nuclear arms race 9, 19, 30, 51–2, 215–16, 246, 264, 296, 313–14
Nuclear Control Commission 36
nuclear double standard 138
nuclear explosive devices 10, 11, 14, 15, 19, 22, 28, 146–8, 236
nuclear export controls 3, 23, 19, 30, 215–16, 246, 264, 296, 313–14
nuclear fission trigger 219
nuclear fuel: cycle 16, 17, 116, 120, 125–6, 143, 150, 164, 235, 247, 250, 268, 271–2, 276–7, 282–90, 309; production 248; Spent 151, 272; storage 269; technology 278
Nuclear Posture Review 38, 40, 59, 89, 215
nuclear reactor 2, 12, 13, 207, 267–8, 285
Nuclear Risk Reduction Centres 182, 187
Nuclear Security Fund 254, 258, 260
nuclear sharing 13
nuclear stockpile guidance 246
nuclear strike 128, 177
nuclear submarines 181, 259
Nuclear Suppliers Group (NSG) xxii, 35, 100, 116, 152, 166–7, 181, 190, 195, 238, 248, 269–71, 274–9, 281, 284, 303, 309
nuclear taboo 39, 46
nuclear technology cooperation 19
nuclear terrorism 194, 199–201, 205–6, 208–9, 211–12, 252, 307, 314, 318
Nuclear Threat Initiative (NTI) 108, 117, 265, 286
nuclear threshold 1, 10, 178, 183, 191
Nuclear Weapon-Free Zone (NWFZ): Central Asian 144; Nordic 303; South Pacific Nuclear Free Zone Treaty (Treaty of Rarotonga) 144, 147, 149; Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (Treaty of Tlatelolco) 10, 144, 149, 151; Treaty on the African Nuclear Weapon-Free Zone (Treaty of Pelindaba) 144–5, 147, 149; Treaty on the South-East Asia Nuclear Weapon-Free Zone (Treaty of Bangkok) 144, 149
nuclear weapon test explosions 19
Nunn, Sam 254–5, 286
Organization for the Prohibition of Chemical Weapons (OPCW) xxii, 73, 279
Organization for the Prohibition of Nuclear Weapons in Latin America (OPANAL) xxii, 149
organized criminal groups 199
Osiraq 2, 83, 101, 317, 319
P-1 centrifuge 97
P-2 centrifuge 97, 101, 113
pariah states 33, 195, 197
Paris Agreement 10, 106–7, 111, 232
Partial Test-Ban Treaty (PTBT) 167, 216
peaceful nuclear explosion 1, 151, 216, 274, 297
peaceful uses of nuclear energy 14, 18, 49, 110, 251, 267–9, 272, 286
Pentagon 35, 37–8, 40, 75, 126, 211
Permissive Action Links (PALs) 204–5
Perry, William J. 37–9, 126–7, 193
plutonium 12, 14–15, 19, 36, 79, 97, 100, 109, 121, 125–6, 128–9, 143, 148, 159, 179, 188; reprocessing 12, 122, 272, 286; separation 12, 15, 117, 248, 268, 270–1, 277, 283, 285, 289
Index 355
Index

post-proliferation measures 35
pre-emption 32, 38, 40, 42–4, 177
Presidential Decision Directive (PDD) 37
Presidential Nuclear Initiatives (PNI) 204, 209, 298
principles and objectives for nuclear proliferation and disarmament 56
Index 357

Tahir, Buhari Sayed Abu 197
Tajoura nuclear research centre 78
Talbott–Jaswant dialogue 159
Technical Assistance to the Commonwealth of Independent States (TACIS) xxiv, 255–6, 260
theatre missile defence (TDM) xxiv, 33, 37, 191

thirteen steps 58–63, 69, 294
threat perception 5, 32, 36, 38, 41, 49
Threshold Test Ban Treaty (TTBT) xxiv, 216
Topol M 3
total disarmament 31, 153, 156–7
Transdniestra 198
Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space (PAROS) xxiv, 237
trigger list 18, 274, 276, 281
tritium 13, 143

unilateralism 109, 118, 295, 315–16
United Nations Disarmament Commission 146
United Nations Millennium Summit 3
United Nations Secretary General’s High Level Panel on Threats, Challenges and Change 271
United Nations Security Council
United Nations Special Session on Disarmament 155
Universal Compliance 67
uranium: conversion 79, 106–7, 109, 117; depleted 78; enrichment 11–13, 97–8, 101–2, 127–8, 136, 143, 145, 150, 174, 196, 202, 248, 268, 271, 277–8, 284, 286, 288–9, 301–2, 317; hexafluoride 174; natural 34, 75, 116–17, 268; oxide 78, 106; uranium-235 12
URENCO 116, 174, 196, 288
US Defense Department 38
US–Indian nuclear partnership 152–3, 159, 162, 171, 190, 238

Vemork 1–2
Vienna Convention on the Law of Treaties 23, 61

war on terrorism 41, 176
waste disposal 283
weapon-grade fissile material 14, 16
weapon-origin fissile material 18
weaponusable material 270
Weapons of Mass Destruction Commission xxiv, 271
Western European Union 10, 222
Wilson, Woodrow 41
withdrawal 15, 22–4, 28, 36, 41, 47–8, 117, 121–3, 130–1, 141–2, 188, 205, 255, 305, 318
Wolfowitz, Paul 33–4
World Association of Nuclear Operators (WANO) xxiv, 209
World Trade Organization (WTO) xxiv, 80, 111
World War II 1, 74–5, 268, 296
yellowcake 78, 96
Yeltsin, Boris 107, 254
Yom Kippur war 140
Yongbyon 120, 122, 125–6, 129

Zangger Committee 35, 195, 269–70, 274–6, 278–9, 281, 309
zero option 221, 232