12. Reflections on continuity and change in arms control

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I. Introduction

In asserting that law and diplomacy could have a role in building security, the pioneers of modern arms control in the 1950s were making a conscious effort to overcome the bitter (and at the time very recent) experience that security depended, above all, on military capability based in large part on superior technology.

During the cold war, arms control was necessary given the risk (albeit remote) that bipolar political confrontation would spill over into a war that would, because of the presence of nuclear weapons, be even more catastrophic than those of the past. Whether arms control can play a useful role in managing security problems is again a topical question today. The United States has become so powerful relative to its peers that it is tempted to seek national security by framing international political dialogue in ways that suit US national interests (as determined unilaterally), underpinned by a predominant military power based on an overwhelming superiority in military technology. Whereas war avoidance was the main US priority during the cold war, after its end the use of force has not by any means been excluded as a tool to shape international politics.

This chapter argues that the objectives of arms control, which were set by major power interests during the cold war, have changed significantly and that these changes by and large reflect the trends in thinking about international security in the USA. An example of this tendency is the relatively much greater emphasis placed on strengthening controls to prevent the emergence of new nuclear weapon capabilities without a parallel obligation for properly verified and irreversible nuclear arms reductions. However, there are also some cases where arms control initiatives that are not under the leadership of the United States have been developed, notably in regard to certain types of anti-personnel landmines.

During the cold war, bilateral Soviet–US arms control helped manage the relationship that was the most important single element of the global security environment. After the end of the cold war the strategic objectives that were previously dominant in arms control have been supplemented by a focus on achieving humanitarian goals and attempts to develop instruments that can address the increased concern about threats from non-state actors. Some changes in thinking about what arms control is for are examined in section II of this chapter.

Multilateral arms control efforts led to a number of treaties, including the 1968 Treaty on the Non-proliferation of Nuclear Weapons (Non-Proliferation Treaty, NPT)[1] and the 1972 Biological and Toxin Weapons Convention (BTWC).[2] However, approaches to cooperation, reciprocity and inclusivity in arms control agreements have changed recently. Section III discusses the way in which thinking about the appropriate legal form for arms control has altered. In its cold war variant, arms control was seen as a binding contract between parties. This approach was not only intended to underline that parties should do what they promised, which is true for agreements of any kind, but to indicate that sanctions (albeit of an unspecified kind) could flow from a proven failure to live up to obligations.

Closely connected to the discussion of legal form has been the relative emphasis placed on verifying whether or not the parties to an agreement actually live up to their obligations. Verification provisions have sometimes, but by no means always, been a feature of arms control treaties. Strong verification provisions have tended to be a key element in those treaties that major powers perceive as touching on the most critical security issues. The issues of verification and compliance are also taken up in section III.

One key aspect of arms control is determining the scope of what is to be controlled by any agreement. This judgement has always been made in the context of the objectives of the agreement, which has been based on either a strategic assessment or humanitarian grounds. Recently, states have examined how arms control might contribute to counter-terrorism, and in particular the effort to reduce the risk of mass impact terrorism. Section IV discusses the impact of this change on thinking about the technologies that should be subject to control. Section V draws conclusions from the preceding sections.

II. The objectives of arms control

Modern arms control was initiated in the mid-1950s at a time of great tension between two ideologically opposed blocs which were just embarking on what became a long period of competitive armament. Whereas a number of discussions about general and complete disarmament had taken place previously, arms control was conceived in the USA as a mechanism that could provide some predictability and (hopefully) moderate and make more stable a strategic competition that threatened to take on new and more dangerous proportions after the Soviet Union tested its first nuclear weapon in 1949.

Thomas C. Schelling and Morton H. Halperin identified the specific objectives of arms control as being to help prevent war, to make war less destructive

[1] For a description of the main provisions of the NPT and a list of the parties see annex A in this volume. The full text of the NPT is available at URL <http://disarmament.un.org/wmd/npt/npttext.html>. See also chapter 13 in this volume.

[2] The Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction is reproduced on the SIPRI Chemical and Biological Warfare (CBW) Project website, URL <http://www.sipri.org/contents/cbwarfare/>. The site includes complete lists of parties, signatories and non-signatories to this convention. See also annex A in this volume. On the BTWC see chapter 14 in this volume.

should prevention fail and to reduce the financial costs of effective deterrence.[3] However, it has been argued persuasively that the main benefit of Soviet–US arms control was not primarily to curb armaments but to provide a channel of communication and a 'safety valve' between two adversaries which otherwise had few non-confrontational contacts with one another.[4] Arms control was a mechanism at a general level for reducing the risk that war could start either by accident or as a result of misperception or misunderstanding. At a more directly operational level, the establishment in 1963 of a 'hotline' system for emergency communication between the leaders of the two cold war blocs in a crisis had the same purpose.

At the regional level in Europe strategic objectives were predominant in arms control negotiation after 1973, when talks aimed at achieving force reductions in conventional forces were initiated. These discussions and negotiations were between the two armed blocs, the North Atlantic Treaty Organization (NATO) and the Warsaw Treaty Organization (WTO, or Warsaw Pact). Here, too, the opportunity to communicate was at least as important as the effort to create balanced sets of forces—an objective that was recognized to be unachievable at an early stage given the asymmetries in geography, technology and doctrine of the two blocs and the inherent difficulties of measuring capability.[5]

Initially, it appeared as if the new objective of multilateral arms control after the end of the cold war would be to alleviate serious humanitarian concerns over the indiscriminate effect of weapons, rather than being related to the strategic balance in any particular location or among any particular group of states.

This approach probably influenced the decision to ban chemical weapons. While a ban on chemical weapons had been discussed since the 1960s, international agreement on the text of the 1993 Chemical Weapons Convention (CWC)[6] could not be reached until 1992—when these weapons were no longer earmarked by the major powers for battlefield use in Europe. The humanitarian impulse was triggered in the early 1990s by events in Iraq. While Iraq had used chemical weapons on the battlefield as early as 1984, in the context of the 1980–88 Iraq–Iran War, the international reaction to this use was limited. International reaction was much stronger after 1988, when Saddam Hussein ordered the use of chemical weapons to attack Halabja, a town of about 80 000 predominantly Kurdish inhabitants. The assault on Halabja included a series of attacks mounted over many hours and involved

[3] Schelling, T. C. and Halperin, M. H., *Strategy and Arms Control* (Twentieth Century Fund: New York, N.Y., 1961), p. 2.

[4] This point is made in Carter, A., SIPRI, *Success and Failure in Arms Control Negotiations* (Oxford University Press: Oxford, 1989), pp. 6–7.

[5] Epstein, J. M., *Measuring Military Power: The Soviet Air Threat to Europe* (Princeton University Press: Princeton, N.J., 1984).

[6] The Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction (corrected version), 8 Aug. 1994, is available on the SIPRI CBW Project website (note 2). The site includes complete lists of parties, signatories and non-signatories to this convention. See also annex A in this volume. On the CWC see chapter 14 in this volume.

the use of a number of different chemical agents. The same or greater destructive effect could have been achieved using conventional weapons, given that the population of the town was defenceless and captive. It was arguably the abhorrent nature of the attack—in effect using the civil population for large-scale weapon testing—rather than its destructiveness that provided a political impulse leading to the successful conclusion of the CWC in conditions where the great powers no longer had any strategic imperative to retain chemical weapons.

Another category of weapon that was examined with a view to reaching a global arms control instrument and where the humanitarian impulse was combined with a declining military utility was that of anti-personnel landmines.[7] A provision of international humanitarian law that had been agreed in 1981, the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons which may be Deemed to be Excessively Injurious or to have Indiscriminate Effects (CCW Convention, or 'Inhumane Weapons' Convention),[8] was examined in the mid-1990s with a view to strengthening it. However, in 1996 the parties to those negotiations agreed to limited amendments to the part of the convention dealing with landmines (Protocol II). Subsequently, a group of states that wished to go further negotiated a complete ban on certain types of landmines, which resulted in the 1997 Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction (APM Convention).[9] This complete ban underlined that for the countries concerned the negative humanitarian impact of using these kinds of landmines outweighed any potential military utility.

A number of arms control processes have been re-examined to see whether and how they might contribute to denying capabilities to non-state groups that may be planning acts of mass impact terrorism. It has not proved possible to adapt the BTWC, the CWC or the NPT. However, states that participate in export control regimes have discussed how to adapt controls to take the risk of mass impact terrorism into account.[10] The need to prevent acts of mass impact terrorism has also led to new approaches to arms control within the United Nations (UN). Several UN Security Council resolutions have created obligations on states to put in place national laws and procedures to implement them in an effort to address terrorist threats.[11]

[7] On arms control efforts related to anti-personnel landmines see also chapter 15 in this volume.

[8] For the parties to and basic information on the CCW Convention and Protocols see annex A in this volume.

[9] For the parties to and basic information on the APM Convention see annex A in this volume.

[10] On export control regimes see chapter 16 in this volume.

[11] UN Security Council Resolution 1333, 19 Dec. 2000, established an arms embargo on Usama bin Laden and his associates. UN Security Council Resolution 1373, 28 Sep. 2001, required states to refrain from providing any form of support, active or passive, to entities or persons involved in terrorist acts, including by eliminating the supply of weapons to terrorists. The provisions of UN Security Council Resolution 1540, 28 Apr. 2004, are discussed further below. UN resolutions are available at URL <http://www.un.org/Docs/sc/index.html>. On Resolution 1540 see also Anthony, I., 'Arms control and non-proliferation; the role of international organizations', *SIPRI Yearbook 2005: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2005), pp. 542–47.

Cooperation, symmetry and reciprocity in arms control

During the cold war, arms control efforts at the global, regional and bilateral levels had certain common characteristics that contrast somewhat with contemporary approaches. Notably, arms control was conceived during the cold war as something that states would do in cooperation, even in conditions where they were heavily armed adversaries in what was sometimes a bitter ideological struggle.

The US analyst Robert Jervis perhaps best captured this notion with the expression 'cooperation under the security dilemma'.[12] Jervis meant that if a unilateral policy intended to increase the security of one state is perceived by other states to diminish their security, then they will work to defeat it. This made it a common interest of states to make other states understand the non-threatening and defensive intent behind their national programmes even if those programmes, on the face of it, appeared offensive.

Bilateral arms control was nevertheless viewed as part of, and not isolated from, the cold war conflict, and the approach was not based on an imperative to compromise. However, cooperation was never taken to imply that reaching agreement was of paramount importance. The underlying thinking was summarized from a US perspective by Secretary of State James A. Baker in December 1989, when he noted that 'our mission must be to press the search for mutual advantage. Where we find Soviet agreement, we'll both be better off. Where we meet Soviet resistance, we'll know that we have to redouble our efforts so that Moscow practices, not just preaches, the new thinking'.[13]

Multilateral arms control also took place during the cold war but, whereas bilateral Soviet–US arms control talks and the conventional arms talks between the two military blocs that faced one another in Europe dealt with limited sub-sets of the total inventories of arms held by the negotiating parties, multilateral arms control dealt with all of the weapons in a particular class that could be isolated and defined according to technical parameters.

The obligations established in the NPT apply to nuclear weapons or nuclear explosive devices. Similarly, the BTWC applies to 'microbial or other biological agents, or toxins whatever their origin or method of production, of types and in quantities that have no justification for prophylactic, protective or other peaceful purposes'.[14] The obligations established in the BTWC also apply to any weapons, equipment or means of delivery that are designed to use such agents or toxins for hostile purposes or in armed conflict. In contrast, the Soviet–US bilateral arms control treaties applied to some, but by no means all, nuclear weapon delivery systems. The obligations in the 1990 Treaty on Con-

[12] Jervis, R., 'Cooperation under the security dilemma', *World Politics*, vol. 30, no. 2 (1978), pp. 167–214

[13] Baker, J. A., 'U.S.–Soviet relations: a discussion of perestroika and economic reform', *US Department of State Bulletin*, vol. 89 (Dec. 1989), URL <http://www.findarticles.com/p/articles/mi_m1079/is_n2153_v89/ai_8528187>.

[14] BTWC (note 2), Article I.

ventional Armed Forces in Europe (CFE Treaty)[15] applied to a limited number of categories of conventional weapon, and not all of the delivery systems in those categories held in the inventories of the signatories were treaty-limited items.

One feature of the approach to arms control in the past was an assumption that the outcome of negotiations among parties will be to create reciprocal obligations that will be applied in a symmetrical manner to the military capacities of those states that are parties to arms control agreements.[16] Furthermore, universal adherence to multilateral treaties was put forward as an arms control objective. After the end of the cold war these assumptions were challenged and there is growing evidence that neither symmetry nor reciprocity are universally regarded as prerequisites for arms control.

This tendency away from symmetry has been expressed by US President George W. Bush in regard to Russian–US arms control. President Bush observed in 2001:

> I think it's interesting to note that a new relationship based upon trust and cooperation is one that doesn't need endless hours of arms control discussions . . . I've announced a level that we're going to—that we'll stick by. To me, that's how you approach a relationship that is changed, and different . . . I looked the man in the eye and shook his hand, and if we need to write it down on a piece of paper, I'll be glad to do that. But that's what our government is going to do over the next 10 years. And we don't need an arms control agreement . . . to reduce our weaponry in a significant way.[17]

In the event, Russian President Vladimir Putin expressed a preference for codifying an agreement, and the Treaty on Strategic Offensive Reductions (SORT) was signed on 24 May 2002.[18] Although it is a treaty, SORT has been characterized by analysts as 'a codification of unilateral statements made by the presidents'.[19] Unlike past strategic arms control agreements, the manner of reducing arsenals in an irreversible, verified manner is not laid down in the treaty. Each side can decide how to carry out the reductions and, without violating the terms of the treaty, delivery systems and the materials that are the essential elements of warheads may be held in storage. Thus, parts of the 'reduced' arsenal could be reconstituted rather quickly.

[15] For the text of the CFE Treaty and Protocols see Koulik, S. and Kokoski, R., SIPRI, *Conventional Arms Control: Perspectives on Verification* (Oxford University Press: Oxford, 1994), pp. 211–76; and the OSCE website at URL <http://www.osce.org/docs/english/1990-1999/cfe/cfetreate.htm>. The parties to the CFE Treaty are listed in annex A in this volume. See also chapter 15 in this volume.

[16] One exception to this was the acceptance in the NPT of 5 so-called 'recognized' nuclear weapon states. The NPT did not confer permanent nuclear weapon state status on the 5 countries, but a pragmatic acknowledgement was made that a period of time would be needed during which the 5 states could negotiate the conditions under which they could reduce and then eliminate their nuclear forces.

[17] The White House, 'President announces reduction in nuclear arsenal', Press Conference by President Bush and Russian President Vladimir Putin, News release, Washington, DC, 13 Nov. 2001, URL <http://www.whitehouse.gov/news/releases/2001/11/20011113-3.html>.

[18] SORT was signed by Russia and the USA; it entered into force on 1 June 2003 and is available at URL <http://www.state.gov/t/ac/trt/18016.htm>. See also annex A in this volume.

[19] Miasnikov, E., 'Status of U.S.–Russian negotiations on strategic arms reduction', 9 Aug. 2002, URL <http://www.armscontrol.ru/start/nuc-cuts.htm>.

Therefore, SORT maintains the legal form of a treaty but abandons the notion of symmetry. It does, however, retain the idea of reciprocity, at least in broad form, in that the treaty obliges each party to reduce the numbers of its strategic nuclear warheads to 1700–2200. In a number of other recent initiatives that must be considered as part of modern arms control the idea of reciprocity is absent.

The reciprocal model could be contrasted with some current thinking about arms control, which emphasizes how states can control the military capabilities of third parties. Moreover, a number of political initiatives have been launched by groups of states to explore how they can work together to make the instruments used to restrict the capabilities of others more effective—although each restrictive measure is still applied unilaterally. One example of this tendency has been the transformation and revitalization after 1990 of multilateral cooperation to apply general rules and guidelines effectively through national controls that criminalize the export of specified items without prior authorization. Governments have increasingly come to see export controls as a valuable part of the overall effort to combat proliferation partly because of their preventive aspect. Authorities assess the risk that a specified item will be used in a nuclear, biological or chemical (NBC) weapon programme of concern or in a missile that would be used to deliver such weapons before granting or refusing permission for that item to be exported. Moreover, export controls provide one of the few linkages between the business and scientific community and arms control. Efficient export control authorities have usually developed methods for conducting a systematic dialogue with industry which involves a reciprocal exchange of information that is valuable in combating proliferation. Another recent example where the principle of reciprocity is absent is the 2003 Proliferation Security Initiative (PSI), which is intended to facilitate cooperation among states to prevent specific shipments of certain weapons, their delivery systems or related materials from taking place.[20]

A change in the approach to symmetry and reciprocity can also be seen in the conditions under which a comprehensive nuclear test ban will enter into force, which require participation by the most relevant parties. A ‘standstill agreement’ on nuclear testing was proposed by Indian Prime Minister Jawaharlal Nehru in 1954, but was not endorsed by the Soviet Union, the United Kingdom and the USA until 1958. After a permanent arms control negotiating forum was established in Geneva in 1959, one of its first agenda items was to negotiate a comprehensive ban on testing of nuclear weapons. The negotiations on a global test ban reflected the interest of nuclear powers that had completed their own testing to limit the possibility that an unspecified number of new nuclear weapon states would emerge. However, the Compre-

[20] US Department of State, Bureau of Nonproliferation, ‘Proliferation Security Initiative: frequently asked questions’, Fact sheet, 26 May 2005, URL <http://www.state.gov/t/isn/rls/fs/32725.htm>. On PSI see also Ahlström, C., ‘The Proliferation Security Initiative: international law aspects of the Statement of Interdiction Principles’, *SIPRI Yearbook 2005* (note 11), pp. 743–48.

hensive Nuclear-Test-Ban Treaty (CTBT)[21] could not be agreed until 1996—the point at which China and France completed the programme of nuclear testing that they considered necessary. The arrangements for entry into force of the CTBT specify that, while the treaty is open to any state, it cannot enter into force until it has been ratified by 44 specified countries that have nuclear research or nuclear power reactors on their territory. Three of these 44 states—India, North Korea and Pakistan—have not signed the treaty and 8, including China, Egypt, Iran, Israel, Russia and the USA, have signed but not ratified it.

Non-state actor participation in arms control

Arms control has traditionally been carried out exclusively by states. However, participation in arms control is beginning to extend beyond states to include a variety of non-state actors.

The APM Convention was achieved in part through the effective political actions of non-governmental organizations (NGOs), which coordinated their activities in an international network that could both spread information and apply political pressure to governments. This coalition made extremely skilful use of modern media and campaigning techniques adapted from the private sector (mainly from the world of advertising). While this innovation, facilitated by the development of wide-area computer networks and in particular by the growth of the Internet, proved extremely effective in shaping opinions in open and democratic societies, its effectiveness in closed and authoritarian societies is more difficult to evaluate.

A similar international NGO network has tried to build momentum behind another campaign to develop a global legal instrument to control small arms and light weapons (SALW). In 2001 the UN adopted the Programme of Action to Prevent, Combat and Eradicate the Illicit Trade in Small Arms and Light Weapons in All Its Aspects. The programme is not a legal instrument and it addresses only illicit trade, rather than other aspects of the production, acquisition and use of SALW. However, it can be asserted with confidence that NGOs played a part in the development and adoption of the programme.

Arms control was traditionally an activity confined to the weapons held in the armed forces of states and for use in international conflicts. After the end of the cold war thought was given to whether arms control might also be applied to shape the capabilities of state armed forces when used in internal conflicts. This discussion was most active in Europe, where a Code of Conduct on Politico-Military Aspects of Security was adopted by the Conference on Security and Co-operation in Europe (CSCE)—the forerunner of the Organization for Security and Co-operation in Europe (OSCE)—in December 1994.[22] The code is a politically binding measure (although it does refer to

[21] The CTBT was opened for signature in 1996 and had been ratified by 132 states by 1 Mar. 2006. For a description of the treaty and a list of the states parties see annex A in this volume.

[22] Organization for Security and Co-operation in Europe, OSCE Code of Conduct on Politico-Military Aspects of Security (COC), OSCE document DOC.FSC/1/95, 3 Dec. 1994, URL <http://www.osce.org/item/883.html>. This document was adopted at the 91st Plenary Meeting of the Special Committee of the CSCE Forum for Security Co-operation in Budapest on 3 Dec. 1994.

international legal agreements related to politico-military affairs) that incorporates existing norms on the democratic control and use of armed forces. The code also lays down guidelines for the personal responsibility and accountability of individual members of the armed forces.

The OSCE code does not apply to the non-state actors that would be engaged in internal conflicts and this remains to a large extent an arms control lacuna, with the exception of the voluntary measures that some non-state armed groups have accepted under agreements reached through non-governmental processes.[23] In a more positive context, a different set of non-state actors—the private sector—is becoming engaged in shaping and implementing export controls. More widely there is evidence of a private sector awareness of the need to be active partners in security building.[24]

Regional, sub-regional and country-specific arms control

Recent history suggests that at present states have great difficulty in agreeing on the objectives of multilateral arms control in so far as it applies to the armed forces and the military capabilities of states. The fact that the Conference on Disarmament (CD) has now failed to agree on a programme of work for nine consecutive years can also be taken as an illustration of this point. In the absence of political convergence around either strategic or humanitarian objectives, further multilateral arms control initiatives should not be expected.

The same difficulty has constrained further progress in arms control at the regional level. In Europe the Agreement on Adaptation was negotiated to adapt the CFE Treaty to conditions where there were no longer two military blocs in Europe.[25] However, the adapted treaty regime has not entered into force. Outside Europe there have been a number of arms control proposals and, in the Middle East in particular, some discussions have occurred among governments about the need for regional arms limitation agreements. There are five treaties that establish nuclear weapon-free zones (NWFZs) in Africa, Antarctica, Latin America, South-East Asia and the South Pacific.[26] Three of these zones have been agreed since the end of the cold war. In addition, Mongolia has declared its territory to be an NWFZ and has, in addition to enacting national legislation to that effect, worked to achieve international

[23] Under a process facilitated by Geneva Call, a Swiss NGO, a number of armed non-state groups have agreed to abide by the provisions of the APM Convention. See the Geneva Call website at URL <http://www.genevacall.org>.

[24] Bailes, A. J. K. and Frommelt, I. (eds), *Business and Security: Public–Private Sector Relationships in a New Security Environment* (Oxford University Press: Oxford, 2004).

[25] For the text of the Agreement on Adaptation see *SIPRI Yearbook 2000: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2000), pp. 627–42; and the OSCE website at URL <http://www.osce.org>. See also chapter 15 in this volume.

[26] On the 1959 Antarctic Treaty; the 1967 Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (Treaty of Tlatelolco); the 1985 South Pacific Nuclear Free Zone Treaty (Treaty of Rarotonga); the 1995 Treaty on the Southeast Asia Nuclear Weapon-Free Zone (Treaty of Bangkok); and the 1996 African Nuclear-Weapon-Free Zone Treaty (Treaty of Pelindaba) see annex A in this volume. The Treaty of Pelindaba has not entered into force.

recognition of that status. The text for a treaty establishing an NWFZ in Central Asia was drafted in 2002.

Another tendency has been to supplement global approaches to controlling arms with instruments tailored to particular sub-regions or to define country-specific measures. For example, issues raised by North Korea's violation of its safeguards agreement with the International Atomic Energy Agency (IAEA)—directly linked to the NPT under Article III.1 of the treaty—have not been addressed by the UN Security Council, although this is envisaged in Article XII of the IAEA Statute.[27] Instead, North Korea's nuclear weapon programme has been addressed through a series of initiatives tailored to the specific conditions of the Korean peninsula. While the most recent of these, the Six-Party Talks, involves China, Japan, North Korea, South Korea, Russia and the USA as participants, only the programmes of North Korea are the subject of discussion. The objective of the talks is to bring North Korea, which is the only country to have withdrawn from the NPT, back into the treaty as a non-nuclear weapon state and to ensure that this decision is irreversible.

The IAEA has been seeking to provide assurances about the peaceful nature of Iran's nuclear programme, about which uncertainties remain with regard to its scope and nature. In parallel with intensive scrutiny of Iran's nuclear programme by the IAEA, after October 2003 three European Union (EU) member states (France, Germany and the UK) negotiated with Iran in an attempt to persuade Iran to modify its nuclear programme.[28] The objective of the 'E3' was to persuade Iran to permanently suspend uranium enrichment and to cancel plans to build a heavy water reactor.[29] The E3–Iran negotiations took place in circumstances where Iran (which still has not been found to be in non-compliance with the NPT) had not been found to be in non-compliance with its safeguards agreement—something that only occurred in September 2005.

In each of these cases the objective of the targeted initiative is being sought through the application of a package of measures tailored to the specific conditions in Iran and North Korea, respectively.

III. Arms control form and process: beyond legal instruments

The relationship between international law and arms control has been redefined as the objectives of arms control have changed. In particular, the tendency to make restricting the capabilities of third parties the purpose for cooperation has altered thinking about the appropriate legal form for arms control. In the past arms control would have been seen as an aspect of international law, but in a modern understanding legal instruments are viewed as one among several elements that, taken collectively, constitute arms control.

[27] The IAEA Statute is available at URL <http://www.iaea.org/About/statute_text.html>.

[28] Kile, S. N. (ed.), *Europe and Iran: Perspectives on Non-proliferation*, SIPRI Research Report no. 21 (Oxford University Press: Oxford, 2005). See also chapter 13 in this volume.

[29] See the discussion in chapter 13.

The characteristics normally associated with law-making were important when agreements were negotiated by adversaries or when there was a low level of trust that other parties would make good faith efforts to comply with any obligations established in an agreement. Legal agreements create rights and obligations between parties to them, either specified in the agreement itself or established by recognized and accepted international legal practice and principles. One important characteristic of legal agreements is that the parties understand that violating them could lead to remedies that are either laid down in the agreement or that are recognized under general treaty law. The possibility of remedies being taken leads states to insist on a text that minimizes the risk of being found to be non-compliant—by seeking precise language to establish a common understanding of obligations contained in the agreement, for example.

In cases where groups of states have a long history of cooperation, are broadly like-minded and perhaps are partners in politico-military alliances, an approach based on an assumed risk of cheating and the possibility that non-compliance could trigger sanctions might not be thought appropriate. Precise language about what an agreement calls for would still be valuable, but in order to avoid misunderstanding rather than in order to avoid sanctions.

The cooperation between groups of states to make their national export controls more effective that is noted above has taken the form of ad hoc political arrangements, rather than being codified in legal agreements establishing obligations for the participating states. This was the case during the cold war, when the USA and its allies used the Coordinating Committee for Multilateral Export Controls (COCOM) to manage an embargo on the transfer of many nuclear items, munitions and industrial goods with potential military applications to the Soviet Union and its allies. When the decision to abolish COCOM was taken in 1993, multilateral export control cooperation was transformed into an effort to agree rules that all participating states would apply to all destinations through their national laws.

During the 1990s this system of international cooperation to develop high and uniform export control standards to be applied nationally was revitalized and extended. More states now participate in the activities of the main cooperation arrangements—the Australia Group (AG), the Missile Technology Control Regime (MTCR), the Nuclear Suppliers Group (NSG) and the Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies (WA)—and participation continues to grow. The AG has 40 participants (39 states and the European Commission); 45 states participate in the NSG; the MTCR has 34 participants; and 40 states participate in the WA.[30]

In spite of these developments, the issue of which states are needed for the cooperation arrangements to function effectively has been discussed extensively. As the groups have expanded, and in the absence of a very specific

[30] See Anthony, I. and Bauer, S., 'Transfer controls', *SIPRI Yearbook 2005* (note 11), pp. 699–719; and chapter 16 in this volume.

objective, there is a feeling that the sense of 'like-mindedness' that characterized COCOM has been lost. At the same time, there are a growing number of sources of supply for proliferation-sensitive materials, technologies, equipment and knowledge. The increasing number of sources of supply is undermining the effectiveness of approaches carried out by groups with limited participation. In these circumstances, a number of influential actors have pointed to the possible need to apply legal agreements in the area of export control and to move away from a more ad hoc approach based on understandings reached between officials and experts at the working level.

The Director General of the IAEA, Mohammed ElBaradei, has drawn attention to the fact that export controls would be more effective if they were based on a legal agreement by all parties under which observance of the established rules would guarantee countries access even to proliferation-sensitive materials and equipment. If countries conclude that they will be denied specific items regardless of their status under legal agreements, this will undermine their commitment to compliance. ElBaradei has argued that:

> the nuclear export control system should be binding rather than voluntary, and should be made more widely applicable, to include all countries with the capability of manufacturing sensitive nuclear related items. It should strike a balance between ensuring effective control and preserving the rights of states to peaceful nuclear technology. The aim should be easier access to non-sensitive technology and stronger control over the most sensitive parts.[31]

In September 2004 Jack Straw gave public support to the idea of an arms trade treaty. While Straw is the British Foreign Secretary, his support was given at a political rally of the Labour Party, rather than on a government platform. However, in September 2005 Straw included on the agenda of an EU foreign ministers' meeting a proposal from the UK and Finland for an international arms trade treaty to cover the traffic in SALW. The foreign ministers discussed reaching a common position inside the EU that could serve as the basis for a proposal to be taken forward in the United Nations in 2006.[32]

While these proposals might lead to a new discussion of the appropriate legal form for export controls, other initiatives have underlined that ad hoc and political approaches can be extremely effective under certain conditions. In 1998 the EU made a political declaration on the Code of Conduct on Arms Exports.[33] The Code has two main elements. The first is a normative component consisting of guidelines that were based on eight criteria for arms exports

[31] ElBaradei, M., 'Nuclear non-proliferation: global security in a rapidly changing world', Speech to the Carnegie International Non-proliferation Conference, Washington, DC, 21–22 June 2004, URL <http://www.ceip.org/files/projects/npp/resources/2004conference/home.htm>.

[32] The proposal was not accompanied by any details of the scope or objectives of such a treaty. However, non-governmental groups have been advocating such a treaty since at least 1993, when a coalition of academics and lawyers put forward a Draft Convention on the Monitoring and Reduction of Arms Production, Stockpiling and Transfers. The essence of the 1993 proposal was mandatory registration and reporting of arms production, stockpiling and transfers accompanied by criminalization of transfers of non-registered items.

[33] Council of the European Union, European Union Code of Conduct on Arms Exports, Brussels, 5 June 1998, URL <http://ue.eu.int/uedocs/cmsUpload/08675r2en8.pdf>.

agreed in 1991 in meetings of the five permanent members of the UN Security Council. The second element comprises operative provisions including: an exchange of information about export licence applications that have been denied for reasons related to the Code, consultations on potential 'undercuts' that could occur if an EU member state exports an essentially identical item to an end-user that has been denied a licence by another member state, and a mechanism for reporting on EU Code implementation.

Although it is based on a political declaration, the Code of Conduct has become the cornerstone of EU export control cooperation on conventional arms. Officials from EU member states have elaborated a User's Guide which has become a handbook that is used on a daily basis by licensing officers in carrying out their work.[34] The reporting mechanism has been developed to the point where it now provides unprecedented transparency in EU arms exports.[35]

Since the end of the cold war many programmes have developed to provide financial, economic and technical assistance to states (in the first instance the Russian Federation) which lack the means to implement shared disarmament, non-proliferation and counter-terrorism objectives. The USA's Cooperative Threat Reduction (CTR) programme is probably the best known programme of this kind. Managed by the Department of Defense, CTR was initially an emergency programme responding to the rapid collapse of the Soviet Union. Subsequent CTR projects have helped implement commitments contained in arms control agreements—the first bilateral 1991 Treaty on the Reduction and Limitation of Offensive Arms (START I)[36] and the CWC. Moreover, the 1991 legislation that established the CTR Programme (usually known as the Nunn–Lugar Act) was revised in 1997 and 2003 to allow funds to be spent on a broader range of activities. Further revisions were made in 2005 to widen the scope of the activities captured by CTR even further, so that virtually all geographical and functional restrictions on the use of funds will be lifted.

International non-proliferation and disarmament assistance (INDA) differs from the traditional approach to arms control. As noted above, the traditional approach depends on each state party to a treaty or an agreement implementing its obligations in good faith and at its own initiative and expense. INDA consists of practical assistance measures that are jointly implemented on the territory of one state by a coalition of parties that may include states, international organizations, local and regional government, NGOs and the private sector. Through initiatives like the Global Partnership Against Weapons and Materials of Mass Destruction, agreed in 2002 by the Group of Eight (G8) leading industrial nations, more countries are becoming engaged as either

[34] Council of the European Union, User's Guide to the European Union Code of Conduct on Arms Exports, Document 5179/05, Brussels, 11 Jan. 2006, URL <http://ue.eu.int/cms3_fo/showPage.asp?id=408&lang=en&mode=g>.

[35] 'Seventh Annual report according to operative provision 8 of the European Union Code of Conduct on Arms Exports', 14 Nov. 2005, *Official Journal of the European Union*, C328 (23 Dec. 2005), p. 1.

[36] The START I Treaty was signed by the USA and the Soviet Union; it entered into force on 5 Dec. 1994 for Russia and the USA (under the 1992 Lisbon Protocol, which entered into force on 5 Dec. 1994, Belarus, Kazakhstan and Ukraine also assumed the obligations of the former Soviet Union under the treaty). For the treaty see URL <http://www.state.gov/www/global/arms/starthtm/start/toc.html>.

donors or recipients of assistance.[37] As the geographical and functional scope of INDA has expanded, this is becoming an important part of the modern understanding of arms control.

In a recent innovation, the UN Security Council passed Resolution 1540 in April 2004.[38] This resolution introduced a requirement for states to introduce a number of national measures intended to reduce the risk that groups planning mass impact terrorism could gain access to NBC weapons or missile delivery systems for them. The resolution was not adopted in response to a particular event but was viewed as a preventive measure. The resolution, which was discussed briefly and by a limited number of states prior to its adoption, creates binding obligations on all UN member states to amend their national laws and regulations or create new ones. It therefore represents an innovative legal approach to arms control from a number of angles.

Verification, safeguards and transparency

In conditions where parties to arms control agreements have little reason to trust one another, few such agreements can be considered 'self-executing' in the sense that all parties have such an evident self-interest in compliance as more or less to exclude cheating. Therefore, the question of how to verify that parties to an agreement respect their obligations has been an important feature of arms control.

Allan S. Krass has defined verification as 'the process of determining the compliance of treaty partners based on the results of monitoring and on judgements of their significance in the existing military and political context'.[39] Paula de Sutter has noted that 'verification, compliance assessment and compliance enforcement are the three components of a policy process wherein information about a state's actions is weighed against its obligations and commitments, and if it is determined that the state is not fulfilling its obligations and commitments, steps are identified and taken to induce or enforce compliance'.[40] The determination must usually be made by each of the parties to an agreement individually because there is usually no mechanism for collective judgement about compliance with most arms control treaties.

[37] See also Anthony, I., 'Arms control in the new security environment', *SIPRI Yearbook 2003: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2003), pp. 567–70; and Anthony, I. and Bauer, S., 'Transfer controls and destruction programmes', *SIPRI Yearbook 2004: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2004), pp. 758–61. On the Global Partnership see Anthony and Bauer (note 30), pp. 699–719. See also Anthony, I. and Fedchenko, V., 'International non-proliferation and disarmament assistance', *SIPRI Yearbook 2005* (note 11), pp. 675–98.

[38] UN Security Council Resolution 1540 (note 11).

[39] Krass, A. S., *The United States and Arms Control: The Challenge of Leadership* (Praeger: Westport, Conn., 1997), p. 68. See also Krass, A. S., SIPRI, *Verification: How Much is Enough?* (Taylor & Francis: London, 1985).

[40] de Sutter, P., US Department of State, Assistant Secretary for Verification and Compliance, 'Verification, compliance and compliance enforcement', Remarks to the UN General Assembly, New York, 22 Oct. 2004.

For most of the cold war the opportunities to carry out verification were restricted by the fact that the adversaries were not in a position to enforce compliance. The negotiation of verification provisions proved a stumbling block to both bilateral and multilateral arms control.

The development of IAEA safeguards illustrates that, even when verification measures were developed for cold war arms control, they could only be limited in their scope. Although safeguards are sometimes referred to as the verification mechanism of the NPT, this is not an accurate characterization. The concept of safeguards pre-dates the NPT and was first applied in Europe in the framework of the 1957 Treaty Establishing the European Atomic Energy Community (Euratom Treaty). Article III of the NPT contains the requirement that:

> each non-nuclear-weapon State Party to the Treaty undertakes to accept safeguards, as set forth in an agreement to be negotiated and concluded with the International Atomic Energy Agency in accordance with the Statute of the International Atomic Energy Agency and the Agency's safeguards system, for the exclusive purpose of verification of the fulfilment of its obligations assumed under this Treaty with a view to preventing diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices.[41]

Three observations follow from this. First, comprehensive safeguards are the means by which the IAEA independently verifies the declarations made by states about their nuclear material and activities. Therefore they are limited in the information that they can provide in that they apply only to materials declared by the state subject to the safeguards. Safeguards cannot provide information about undeclared materials. Second, there is no obligation under the NPT for nuclear weapon states to apply safeguards at all, including to their civil nuclear activities. Third, the NPT is usually said to rest on three 'pillars' and no verification standard has been established for two of those pillars—the right in Article IV of peaceful use of nuclear technology, and the commitment of nuclear weapon states in Article VI to pursue disarmament in good faith.

When the cold war ended, it appeared as if this situation in regard to verification could change. A number of treaties negotiated at that time—the 1987 Treaty on the Elimination of Intermediate-Range and Shorter-Range Missiles (INF Treaty),[42] START I, the CFE Treaty and the CWC—had an elaborate verification apparatus and a mechanism for judging compliance and discussing issues of non-compliance. In each of these cases the verification regimes were based in part on extremely intrusive inspection regimes.

A new safeguards regime was also negotiated after 1993, embodied in a model Additional Protocol to bilateral safeguards agreements. Darryl Kimball and Paul Kerr have described the essence of the Additional Protocol as reshaping the safeguards regime:

[41] NPT (note 1).

[42] For basic information on the INF Treaty see annex A in this volume.

from a quantitative system focused on accounting for known quantities of materials and monitoring declared activities to a qualitative system aimed at gathering a comprehensive picture of a state's nuclear and nuclear-related activities, including all nuclear-related imports and exports. The Additional Protocol also substantially expands the IAEA's ability to check for clandestine nuclear facilities by providing the agency with authority to visit any facility (declared or not) to investigate questions about or inconsistencies in a state's nuclear declarations.[43]

Three nuclear weapon states (France, the UK and the USA) have signed and ratified an Additional Protocol with the IAEA.

During the cold war, states went to great lengths to find out as much as they could about the military capacities of actual and potential adversaries, using all available means of collecting information. A parallel effort was undertaken by states to prevent information about their own military capabilities from leaking. This meant that secrecy was a strong characteristic of state attitudes towards security matters for most of the period during which arms control was being developed.

What seemed to be a new approach to verification was triggered by a change in the Soviet Union, where President Mikhail Gorbachev altered the secrecy paradigm. One of the most important aspects of the new approach was its emphasis on transparency as a unilateral, voluntary act by the government of a state that had previously made secrecy one of its main priorities. This 'official openness' was the opposite of official secrecy and had a powerful effect on international perceptions of the Soviet Union.[44]

The new approach to openness proved to be short lived. In implementing the verification provisions of the CWC inspectors have not been able to use the most up-to-date equipment available. In nuclear arms control, modern methodologies and equipment for non-intrusive monitoring of nuclear materials have not been applied in verification. The collapse of the effort to provide a verification system for the BTWC and the uncertainty about the need for a verification provision in a treaty to ban the production of fissile material for military purposes are also signs that there are still strict limits to the willingness of states to open themselves to inspection.

Dealing with non-compliance

There will inevitably be a spillover from changing approaches to verification into issues of arms control compliance assessment and enforcement. In the absence of a verification standard, collective judgements about treaty non-compliance depend on the quality of information available through national

[43] Kimball, D. and Kerr, P., Arms Control Association, 'The 1997 IAEA Additional Protocol at a glance', Fact sheet, Jan. 2005, URL <http://www.armscontrol.org/factsheets/IAEAProtocol.asp>.

[44] Ann Florini has noted that while 'Secrecy means deliberately hiding your actions; transparency means deliberately revealing them. This element of volition makes the growing acceptance of transparency much more than a resigned surrender to the technologically facilitated intrusiveness of the Information Age. Transparency is a choice, encouraged by changing attitudes about what constitutes appropriate behavior'. Florini, A., 'The end of secrecy', *Foreign Policy*, 22 June 1998. See also chapter 6 in this volume.

means and the degree to which states share assessments of that information. This places a premium on the 'like-mindedness' among states vis-à-vis the state that is the object of verification and in essence makes verification a reflection of political relationships.

The recent case of Iraq has underlined the difficulty of managing a rule-based international response in conditions where a state is suspected to be developing NBC weapons. In the nuclear weapon-related realm Pierre Goldschmidt, former Deputy Director General of the IAEA, has described the difficulty of dispelling suspicions, even taking into account the great progress that has been made in developing more effective safeguards.[45] Where a state has been found to be in non-compliance with safeguards agreements, these suspicions will be heightened, and any lack of clarity about future nuclear ambitions carries a risk that concerned states will seek to resolve this problem outside a rule-based international framework. To reduce the risk of this occurring, Goldschmidt has urged the UN Security Council to adopt a generic binding resolution that would establish peaceful measures for containing crises when the IAEA finds a state to be in non-compliance with its safeguards obligations.[46]

IV. The impact of technology

Arms control is an effort to reduce the risk of clashes between organized armed forces under the control of states and armed with weapons that were designed and developed for battlefield use. Within this frame of reference it is not enough for a particular item to be lethal or destructive in order to be considered a weapon. In order to be attractive to a military user a material needs to be stable enough to resist a reduction of its effect during handling and storage, as it is unlikely to be used immediately after production. The results of using the weapon should be predictable under different climatic and geographical conditions and against different kinds of targets. Once the material to be used in the weapon has been identified, it must be possible to produce, process and shape it into forms that can be filled into munitions or other delivery systems, or into forms that can be held ready for such filling. It must be possible to carry out this process of filling and storing weapons and then transporting them and using them without too great a risk to the possessor.

These factors have also shaped the decisions about the items that should be subject to arms control measures. For example, in the case of radiological dispersal devices (RDDs or 'dirty bombs') it was decided in the 1970s that because there was no battlefield use for such devices in cold war military plan-

[45] International Atomic Energy Agency (IAEA), Pierre Goldschmidt, IAEA Deputy Director General, Head of the Department of Safeguards, 'Present status and future of international safeguards', International Forum for Peaceful Utilization of Nuclear Energy, Tokyo, 12 Feb. 2003, URL <http://www.iaea.org/NewsCenter/Statements/DDGs/2003/goldschmidt12022003.html>.

[46] Goldschmidt, P., 'The urgent need to strengthen the nuclear non-proliferation regime', Carnegie Endowment for International Peace, *Policy Outlook*, Jan. 2006, URL <http://www.carnegieendowment.org/files/PO25.Goldschmidt.FINAL2.pdf>.

ning, agreements related to them were superfluous. Recently, however, the need for and the feasibility of controlling high-activity radioactive sources that could be used to make dirty bombs has attracted much greater attention in the light of the efforts to adapt arms control to different kinds of threats, including mass impact terrorism. Radiological terrorism requires little technical knowledge and could involve a much wider range of relatively easily accessible materials.[47] Nuclear terrorism—obtaining or constructing a device that produces a nuclear explosion—requires great technical expertise and access to specific types of material (highly enriched uranium or certain types of plutonium) that are not easy to obtain. These factors are to a degree shaping the choice about which materials to make the focus of control.

When defining the scope of measures aimed to combat terrorism, none of the above factors might apply when thinking about which materials should be subject to control. In thinking about a mass impact terrorist attack, the choice of item to be used as a 'weapon' may be only loosely connected to the technical characteristics noted above and becomes heavily dependent on the intentions of the actor that acquires it (whose identity could be unknown in advance of an attack).

Roger Roffey has observed that because of their properties, threats from biological agents should be seen as risks to be managed rather than problems to be solved.[48] Roffey has also pointed out that since micro-organisms are self-replicating, maintaining and updating a catalogue of agents would be a formidable challenge because extremely small quantities are required to permit mass production given the right growth conditions. Furthermore, the approaches for handling biological material are frequently somewhat different for human, animal and plant pathogens and for toxins. Therefore, if the threat of malicious use is extended beyond attacks against people to include attacks against plants and animals, the magnitude of the task becomes even greater.

The nature of biological agents and their use means that there is no comprehensive inventory of locations where biological agents are being isolated, produced, held and used. Roffey has noted that dangerous pathogens are distributed globally and that they are held in thousands of laboratories, clinical facilities or commercial companies. The biological agents and toxins can be present in a number of places in a facility if they are used or being studied, in addition to the places where pure cultures are stored in freezers and the like.

[47] Maurizio Martellini and Kathryn McLaughlin of the Landau Network-Centro Volta have explained that 'there are hundreds of thousands of radiological sources currently in use in scientific and commercial activities worldwide, ranging from nuclear medicine and pharmaceuticals to geological activities. These sources pose varying degrees of proliferation risk according to their level of radioactivity and their relative sizes'. In some cases redundant radioactive sources are simply abandoned without further control and these could be recovered by groups with malicious intent. Martellini, M. and McLaughlin, K., Landau Network-Centro Volta, 'The security of high-activity radioactive sources', Background paper 3 presented at the Conference on Strengthening European Action on WMD Non-proliferation and Disarmament: How Can Community Instruments Contribute?, Brussels, 7–8 Dec. 2005, URL <http://www.sipri.org/contents/expcon/euppconfmaterials.html>.

[48] Roffey, R., 'From bio threat reduction to cooperation in biological proliferation prevention', Background paper 4 presented at the Conference on Strengthening European Action on WMD Non-proliferation and Disarmament: How Can Community Instruments Contribute? (note 47). On the need for a global approach to bio-security see appendix 14A in this volume.

Apart from these stocks—which in theory could be catalogued, although this would be a large task—biological agents can, in many cases, be isolated from nature.

Many common industrial chemicals that are in widespread use around the world have been identified with a risk of terrorist use, including ammonia, chlorine, oxides of nitrogen and sulphur dioxide. Heavy restriction of the use of these chemicals, which are produced in many places and in large quantities, would be a serious impediment to the civil chemical industry and could add significantly to the cost of many common products.

Recently, a number of initiatives have been undertaken that are intended to impact on the capabilities that a non-state actor might find attractive when planning to commit acts of mass impact terrorism. In March 2002 the IAEA approved a Plan of Activities to Protect Against Nuclear Terrorism. Since then the IAEA has carried out a review of its nuclear security plan. At the General Conference in September 2005 the IAEA Governing Board approved a new Nuclear Security Plan to cover the period 2006–2009.[49] The new plan envisages activities in three areas: needs assessment, analysis and evaluation; prevention; and detection and response. The instruments available under the plan are the provision of nuclear security guidance, assistance with the application of that guidance, evaluation services, human resource development, and research and development on enhanced security technology. However, the IAEA Director General has stressed that the new plan will give greater emphasis to the implementation of new and existing instruments—such as the revised 1980 Convention on the Physical Protection of Nuclear Materials and the 2001 Code of Conduct on the Safety and Security of Radioactive Sources. Moreover, analyses by the IAEA have underlined that there are still significant gaps in the application of existing nuclear security measures. Another area of emphasis for the new nuclear security plan will be to give greater prominence to 'coordinated efforts to work towards universal application of harmonized standards based on international instruments'.[50]

Elements of UN Security Council Resolution 1540 are also devoted to the need to control proliferation-sensitive items. Resolution 1540 requires states to establish domestic controls to prevent the proliferation of NBC weapons and their means of delivery, including by establishing 'appropriate effective measures to account for and secure such items in production, use, storage or transport' and 'appropriate effective physical protection measures'.[51]

[49] International Atomic Energy Agency (IAEA), 'Nuclear security: measures to protect against nuclear terrorism, progress report and nuclear security plan for 2006–2009', Report by the Director General IAEA document GC(49)/1, 23 Sep. 2005, URL <http://www.iaea.org/About/Policy/GC/GC49/Documents/gc49-17.pdf>.

[50] ElBaradei, M., 'Nuclear terrorism: identifying and combating the risks', Statement to the International Conference on Nuclear Security: Global Directions for the Future, London, 16 Mar. 2005, URL <http://www.iaea.org/NewsCenter/Statements/2005/ebsp2005n003.html>.

[51] UN Security Council Resolution 1540 (note 11).

V. Conclusions

This chapter underlines that, although there have been some significant changes in thinking about arms control and although the evolution of arms control continues, legal and diplomatic means are still considered to be essential elements in security building. One main objective of arms control—to facilitate a dialogue on international politico-military aspects of security—remains valid and necessary. Other characteristics of arms control in the cold war no longer seem to have the same importance to states at present. Three aspects of cold war arms control—symmetry, reciprocity and universal participation—are absent from a number of recent processes. However, UN Security Council Resolution 1540 does have these features.

Nevertheless, several new processes are having an important effect on the policies and practices of states and may, working in conjunction with one another, represent a new international arms control regime. The multilateral arms control treaties form one part of this emerging regime, but the treaties are increasingly being supplemented and supported by a number of other measures.

Gains in verification and a tendency towards greater transparency facilitated arms control agreements during a short period after the end of the cold war. These gains have now been lost. The changing view on the desirability and feasibility of verification has complicated arms control compliance assessment and enforcement and will continue to do so in future.

Arms control was traditionally focused on items specially designed and developed for military use. Some recent initiatives have focused on items that can have civil as well as military uses. However, a strategy based on the elimination or complete denial of access to dual-use items is neither feasible nor desirable. Dual-use technology is not a threat in and of itself, and denial of access to dual-use technology is only sought when the technology concerned is going to be misapplied or when the risk that it will be misapplied is unacceptably high.

Arms control was traditionally an activity confined to states. However, recent thinking has focused on how the capabilities available to non-state groups that may be planning acts of mass impact terrorism can be controlled and access to them denied on a selective basis. In a more positive context, non-state actors, including the private sector, are becoming engaged in security building.