2. Reflections on transparency and international security

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I. Introduction

In the years immediately following the end of the cold war, transparency was elevated to one of the primary means by which states sought to build a more robust and peaceful international order. Its various manifestations in the nuclear field are discussed in other chapters in this volume. This chapter makes broad observations about transparency and its role in international security, about the factors which have encouraged and discouraged it, and about the prospects for using transparency as an ordering device in an increasingly troubled world. In the early and mid-1990s, the present author was involved in another SIPRI study, on plutonium and highly enriched uranium, in which it seemed natural to assume that the major powers, especially the USA, would remain committed to increasing transparency in pursuit of their common goals.[1] It is distressing to observe how few of the transparency measures advocated by governments and non-governmental organizations (NGOs) at that time have been realized and how precarious the commitment to transparency is today.

After the attacks of 11 September 2001 and the discoveries that followed in their wake, the possibility that terrorists might acquire and use nuclear, biological or chemical weapons (weapons of mass destruction, WMD) is being treated very seriously, and this gives the discussion of transparency new urgency. Greater transparency will be required if states and peoples are to feel confident that these weapons are not being sought by 'rogue actors' for use against them. However, transparency carries new risks and is unlikely to be achieved unless an international environment characterized by greater cooperation and trust is established.

II. Internal and external transparency

Transparency is a necessary feature of any governmental system. The collection and management of information are essential to the exercise of authority, for organizational coordination and efficiency, social trust and the achievement of common purposes. As societies have become more advanced and complex, their reliance on and demands for transparency have increased along with the

[1] Albright, D., Berkhout, F. and Walker, W., SIPRI, *Plutonium and Highly Enriched Uranium 1996: World Inventories, Capabilities and Policies* (Oxford University Press: Oxford, 1997).

capacities for achieving it—capacities which have been greatly enhanced in recent years by developments in information technology. On the other hand, even in the most open societies, transparency is constrained and rule-bound. Privacy and confidentiality are considered as valuable as transparency, and finding the appropriate balances between these attributes, and balances that work in specific contexts, has involved societies and their institutions in long and difficult journeys. The quest for a 'right' balance between financial confidentiality and disclosure is just one example among many.

It is useful to distinguish two realms of transparency: (*a*) the internal realm, entailing transparency within institutions (notably states and firms) and between their various parts; and (*b*) the external realm, entailing the exercise of transparency by institutions in their relations with one another. This chapter focuses mainly on external transparency. However, it should be emphasized that both types are relevant to the governance of nuclear affairs. Nuclear weapon programmes and civil nuclear industries cannot exist—and cannot be operated safely and predictably—without highly sophisticated systems for the organization and exchange of information. Even where secrecy abounds in relations between states, there should be entities within those states that know exactly what is going on and where, just as there should be lines of accountability to ensure that they are doing what they are supposed to be doing. If these internal information systems break down or cease to operate effectively, various problems will ensue. This is what confronted both the new states formed out of the Soviet Union and the international community when the Soviet Union broke apart and its organizational systems had to be reformed. The management of information is unlikely to be effective in weak or fragmenting nation states, especially when their systems of governance are simultaneously undergoing transformation.

The internal and external realms of transparency are not independent of one another. Where internal transparency is strong, as in liberal democracies, there is likely to be a greater disposition towards external transparency than in societies with autocratic forms of government. This said, democracy is not a necessary condition for external transparency: authoritarian states have repeatedly shown their preparedness to accept a measure of transparency when it has served their security interests. Nor does history suggest that democratic states will always be ready to accept such transparency.

III. Competition and secrecy, cooperation and transparency

In any competitive relationship, information about an adversary is a precious commodity. This applies to politico-military relations between states in the international system just as it applies to commercial relations between firms in the capitalist system. The ability to gather and interpret information about an adversary's plans, strategies and capabilities is an important (and in warfare a vital) source of competitive advantage. Where there is competition, there is

therefore a natural tendency towards secrecy—towards keeping activities and plans as opaque to the outsider as is possible and advantageous—just as there is an urge to penetrate the secrecy of the opponent, especially when new capabilities and strategies are under development. This was taken to extremes in the field of nuclear weaponry, especially in the early years of the cold war. Information was withheld to inhibit the diffusion of technology, and a game of deception through disinformation was often played in an effort to maximize the perceptions of the risks facing the other side if it resorted to aggression.[2] In the highly charged atmosphere of this period, there was little interest in honest transparency, although there was great interest in making the opponent's activities as transparent as possible (to certain organs of the state) through espionage and other means.

The obverse is that any cooperative relationship tends to be marked by exchanges of information, sometimes involving a free and sometimes a highly managed exchange. Where there is a desire for cooperation and a desire to make it habitual, transparency usually follows. The sharing of information is both symbolic of the trust that has to underpin cooperation and a necessary means to achieve the purposes that animate it. Those purposes can involve both the avoidance of harm and the achievement of benefit.

In the late 1950s and early 1960s, the Soviet Union and the United States were driven to cooperate by the obvious dangers of unfettered nuclear competition. Especially after the shock of the 1962 Cuban missile crisis, the search began for ways to regulate Soviet–US strategic relations and reduce the risks associated with nuclear deterrence. Transparency became a central feature of the arms control measures that were negotiated, but its scope was tightly limited and methods were chosen to minimize its intrusiveness. Certain kinds of information were collected and exchanged, notably on the number and types of delivery vehicles, but the research and development (R&D) and production systems, together with the systems of command and control, remained essentially out of bounds, as did information on warhead designs. The challenge was to devise a regulatory approach which created room for cooperation in a relationship that remained highly competitive and mistrustful and one that created zones of 'controlled transparency' in an environment in which secrecy remained the dominant condition. From the early 1960s, the need for arms control was not contested by either the Soviet or the US government (at least prior to the presidency of Ronald Reagan), but the means of achieving it was difficult to negotiate, partly because concessions constantly had to be made to sceptics in both states. The USSR remained especially suspicious of measures that would open its facilities and activities to greater foreign scrutiny, fearing that it would expose itself to espionage.

[2] Nuclear deterrence nevertheless relied on certain capabilities and intentions being made transparent. An example was the USSR's conducting of nuclear tests in the late 1940s and 1950s. Besides contributing to the knowledge of weapon performance and design, they were intended to demonstrate to the USA and its allies that the USSR now shared their ability to inflict unacceptable damage through nuclear reprisal. The classic work on deterrence theory and the role of communication in deterrent relations is Schelling, T., *The Strategy of Conflict* (Harvard University Press: Cambridge, Mass., 1960 and 1980).

IV. Transparency as an instrument of non-proliferation

In the 1950s and 1960s, methods were being sought to provide confidence in the renunciation of nuclear weapons by states with extensive technological capabilities, such as Germany and Japan. Transparency was again central to the task. Here it should be noted that transparency has two connotations: (*a*) the condition of being transparent (outsiders can see in); and (*b*) the desire to be transparent (the agent opens itself voluntarily to the outsider). In the mid-1960s, a concern of several states was to assure neighbouring states and the great powers that they could trust that they would not use the materials and expertise acquired for civil nuclear industries to develop weapon capabilities. A system of verification had to be devised that was fully effective, that invited trust, that did not unduly infringe on state sovereignty and that respected the need for confidentiality of industries operating in competitive international markets. The outcome was the international safeguards system, which: (*a*) adopted the methods of material accountancy and exploited distinctive attributes of fissile materials to provide confidence that any diversion could be detected; (*b*) vested authority for gathering information and conducting inspections in an international organization, the International Atomic Energy Agency (IAEA); (*c*) envisaged a relationship between the IAEA and the safeguarded state that was more cooperative than adversarial; and (*d*) honoured demands for confidentiality. The unprecedented invasion of sovereignty which all of this entailed could not be achieved without granting the safeguarded state influence over monitoring procedures and without giving it some protection against abuse. Although the requirements for transparency were more sweeping than in the field of strategic nuclear arms control, transfers of information were highly controlled and rule-bound, as any reading of the IAEA Model Safeguards Agreement will attest.[3]

Transparency also became an important facet of export controls when the Nuclear Suppliers Group (NSG) Guidelines were negotiated in the mid-1970s.[4] The NSG Guidelines required the NSG participating countries to consult with one another on proposed exports and to obtain information from importers on the precise uses to which the goods would be put. The requirement for governments to gather and share information encouraged caution. It also required governments to exert greater control over their own exporting industries while providing them with the internal authority to establish the necessary bureaucratic rules and procedures.

[3] IAEA, The Structure and Content of Agreements Between the Agency and States Required in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons (NPT Model Safeguards Agreement), INFCIRC/153 (Corrected), June 1972, available at URL <http://www.iaea.org/worldatom/Documents/Infcircs/Others/inf153.shtml>.

[4] The NSG Guidelines for Transfers of Nuclear-Related Dual-Use Equipment, Materials, Software, and Related Technology, as they are now called, are incorporated in IAEA document INFCIRC/254. They have been revised several times since 1978. INFCIRC/254 and the revisions are available at URL <http://www.iaea.org/worldatom/Documents/Infcircs/Others/infcirc254.shtml>.

Three 'systems of external transparency' therefore developed in the service of arms control and confidence building during the cold war. The first was developed bilaterally by the USA and the USSR as a means of demonstrating confidence in agreements which limited their deployments of nuclear arms. The second was instituted multilaterally but exercised bilaterally between the IAEA and non-nuclear weapon states (NNWS) as a means of verifying renunciations of nuclear weapons. The third was also multilateral, involving the exchange of information between supplier states which had set themselves the task of exercising more effective control over the international diffusion of nuclear materials.

However, these were not the only systems of transparency. A much larger, if 'underground', transparency system was also established—that involving intelligence gathering and espionage, or 'national technical means' (NTM), as it came to be euphemistically described. The approach was very different from that adopted in international treaties and agreements. Here the objective was to render the activities and intentions of an opponent transparent, while keeping that transparency—and the means of attaining it—hidden from the state that was being observed. As known from experiences in the cold war, this non-voluntary transparency was a source of persistent friction between the two sides, but it provided them with a modicum of confidence in their ability to manage the conflict without descent into war. It was buttressed by developments in remote sensing from the 1950s onwards. As Steven E. Miller has observed, 'technological developments made it possible to peer deeply and comprehensively into the territory of other states without their cooperation'.[5]

Thus there are two kinds of external transparency, *voluntary* and *non-voluntary*. The one is exercised through treaty processes and the other through NTM, which are normally not regulated internationally. While functionally and institutionally separate, there is a necessary but awkward symbiosis between them that has become fundamental to the achievement of security goals.

V. The post-cold war intensification of transparency measures

A great extension, even intensification, of external transparency measures of the voluntary kind was promoted in the decade from about 1985 to 1995. It drew its energy from four major developments: (*a*) the end of the cold war; (*b*) the break-up of a major nuclear weapon state (NWS), the USSR; (*c*) the exposure of Iraq's nuclear weapon programme after the 1991 Persian Gulf War; and (*d*) the emergence of nuclear disarmament as a significant policy issue. Each of them is considered in the sections below.

[5] Miller, S. E., 'Arms control in a world of cheating: transparency and non-compliance in the post-cold war era', eds I. Anthony and A. D. Rotfeld, SIPRI, *A Future Arms Control Agenda: Proceedings of Nobel Symposium 118, 1999* (Oxford University Press: Oxford, 2001), p. 178.

The end of the cold war

Among the many reasons why greater importance was attached to transparency after the end of the cold war, three stand out. First, transparency became symbolic of the cooperative relationship that the East and the West were striving to establish after decades of antagonism. The willingness of the new states formed out of the USSR to embrace transparency measures for security gains was also seen as a test of their commitment to democratic norms and the market economy. China's pronounced, if still tentative, embrace of transparency measures, especially in the form of on-site inspections associated with multilateral treaties, was equally important. Although the forces of democratization were kept at bay by the Chinese Government, economic modernization required reasonably settled political relations with the USA and other states. Cooperation in the United Nations Security Council and in multilateral forums also became an important means of mending fences after the 1989 Tiananmen Square massacre. In addition, multilateral arms control came to serve the Chinese interest of avoiding the emergence of nuclear-armed regional competitor states and limiting the economic cost of sustaining and modernizing its nuclear deterrent.

Second, arms control measures that had been on the cards for many years but could not be negotiated suddenly became possible when China, Russia and other states indicated their preparedness to open up to multilateral inspection. Prominent among these agreements in the 1990s were the 1990 Treaty on Conventional Armed Forces in Europe, the 1993 Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction (Chemical Weapons Convention, CWC) and the 1996 Comprehensive Nuclear Test-Ban Treaty (CTBT). Whereas multilateral verification had been instituted only in the nuclear field and in the NNWS (the application of European Atomic Energy Community, Euratom, safeguards in France and the UK being the one exception), its extension to the NWS and other security fields now seemed possible.[6] This extension of transparency was actively promoted by the USA as one of the main instruments for achieving security in the complex multipolar international system that appeared to be emerging. Among other things, it would help mitigate the security dilemmas that tend to be rife when states are jockeying for advantage in a multipolar system.

Third, the purposes of strategic nuclear arms control were changing. Arms reductions were being sought instead of arms limitation, and an emphasis was being placed on rendering the reductions irreversible. This entailed *inter alia* the verified destruction of armaments and the removal of fissile materials from military cycles prior to their eventual disposition. All of these tasks required

[6] Some IAEA safeguarding of facilities in the NWS was permitted under Voluntary Offer Agreements with the IAEA, but it was very limited. For further discussion of these agreements, see chapter 11 in this volume.

states to commit themselves to greater openness and to the consideration of novel verification measures.[7]

The break-up of the USSR

After the break-up of the USSR in 1991, its nuclear weapon assets were located in four former Soviet republics—Belarus, Kazakhstan, Russia and Ukraine—raising many questions about ownership, about the methods and distribution of governmental control, and about the conditions under which the assets would be returned to Russia. Policy making both inside and outside the former Soviet Union (FSU) depended on an extensive auditing of weapons and fissile materials and identification of the weapon-manufacturing facilities. By the mid-1990s, the FSU's huge and previously hidden nuclear infrastructure had been mapped and a reasonable, if not sufficiently precise, knowledge of its historic functions had been assembled. NGOs played an important part in this process, seizing a moment when most governmental institutions in the FSU were prepared to open their doors to outsiders.[8]

At the same time, the USA made increased transparency a central objective in its relations with Russia. It did so partly to further the verification and irreversibility of arms reduction agreements and partly to encourage openness and sound management across the Russian nuclear infrastructure. An example was set by the US Department of Energy's 1993 Openness Initiative which, although instigated mainly for domestic reasons, assembled and published detailed information on US fissile material inventories and nuclear explosions.[9] The attempt to persuade the Russian Government to move in a similar direction resulted in the 1994 Gore–Chernomyrdin Joint Statement on the Transparency and Irreversibility of the Process of Reducing Nuclear Weapons.[10] Unfortunately, progress became increasingly difficult as Russian–US relations soured in the mid-1990s and as the Russian Government failed to reform its Ministry

[7] They included the verification of warhead dismantlement. See, e.g., British Atomic Weapons Establishment (AWE), *Confidence, Security and Verification: The Challenge of Global Nuclear Weapons Arms Control*, AWE/TR/2000/001 (Aldermaston: Reading, Apr. 2000), available at URL <http://www.awe.co.uk/main_site/scientific_and_technical/publications/pdf_reports/awe_study_report.pdf>; and Fetter, S., *Verifying Nuclear Disarmament*, Occasional Paper no. 29 (Henry L. Stimson Center: Washington, DC, Oct. 1996).

[8] See, especially, Cochran, T. and Norris, R., *Russian/Soviet Nuclear Warhead Production*, *Nuclear Weapons Databook*, Working Paper, NWD 93-1 (Natural Resources Defense Council: Washington, DC, Sep. 1993); Albright, D., Berkhout, F. and Walker, W., SIPRI, *World Inventory of Plutonium and Highly Enriched Uranium 1992* (Oxford University Press: Oxford, 1993); and Carnegie Endowment for International Peace and Monterey Institute of International Studies, *Nuclear Successor States of the Soviet Union* (Carnegie Endowment for International Peace: Washington, DC, and Monterey Institute of International Studies: Monterey, Calif., 1994).

[9] The Openness Initiative was launched by Hazel O'Leary, Secretary of Energy in the first administration of President Bill Clinton, partly in response to public demands for information about the inventories and conditions at US nuclear weapon production sites, such as Rocky Flats, which were scheduled for closure. See Ferm, R., 'Nuclear explosions, 1945–93', *SIPRI Yearbook 1994* (Oxford University Press: Oxford, 1994), p. 309; and chapter 3, section IV, in this volume.

[10] The Joint Statement on the Transparency and Irreversibility of the Process of Reducing Nuclear Weapons is available at URL <http://www.ceip.org/files/projects/npp/resources/summits4.htm>.

of Atomic Energy (Minatom), which retained control over the organizations involved in nuclear weapon R&D and production.

Iraq's nuclear weapon programme

The 1991 Persian Gulf War led to the exposure of a massive nuclear weapon programme in Iraq, which it had mounted in spite of the fact that it was a non-nuclear weapon state party to the 1968 Treaty on the Non-proliferation of Nuclear Weapons (Non-Proliferation Treaty, NPT) and had submitted to full-scope IAEA safeguards. It became obvious that the transparency practised through the safeguards agreements embodied in INFCIRC/153 was insufficient to ensure detection of clandestine weapon activities and that intelligence agencies in the USA and elsewhere had failed to appreciate the scale and advanced stage of Iraq's programme. The result was the launch of the IAEA's '93 + 2' programme,[11] which sought to bring about a comprehensive reform of the IAEA safeguards system, culminating in agreement in 1997 on the Additional Safeguards Protocol to INFCIRC/153.[12] Contemporaneously, many governments launched reviews of their approaches to gathering and sharing intelligence information on WMD programmes. These developments led (in principle if not yet sufficiently in practice) to a widening of access to sites where the IAEA could conduct inspections and to an increase in the information that states with safeguards agreements with the IAEA were routinely expected to supply to the Agency. The Iraqi experience also increased the resources that intelligence agencies devoted to the monitoring of potential weapon programmes and led to the establishment of channels of communication between these agencies and the IAEA.

Nuclear disarmament

In the early to mid-1990s serious attention began to be paid to the means by which nuclear disarmament might be achieved and sustained. This arose from the experience of implementing disarmament in South Africa and Iraq,[13] from the development of measures such as those under the CTBT and the proposed Fissile Material Cut-off Treaty (FMCT), which were useful to global disarmament, from the need felt by the NWS to extol disarmament in order to secure

[11] Programme 93 + 2, to strengthen the effectiveness and improve the efficiency of safeguards, was launched in 1993 and was to make recommendations within 2 years. The programme took 4 years to complete, with final approval granted by the IAEA Board of Governors in May 1997.

[12] IAEA, Model Protocol Additional to the Agreement(s) between State(s) and the International Atomic Energy Agency for the Application of Safeguards, INFCIRC/540, Sep. 1997, and subsequent corrections, available at URL <http://www.iaea.org/worldatom/Documents/Infcircs/Numbers/nr501-550.shtml>.

[13] For a discussion of the means by which South Africa was disarmed and of the background to its decision see Albright, D., *How South Africa Abandoned Nuclear Weapons* (Henry L. Stimson Center: Washington, DC, 1997).

the NPT's indefinite extension in 1995 and from the activism of many NGOs.[14] Studies conducted at this time pointed towards the need for an unprecedented increase in transparency and in the resources devoted to verification.[15] Complete disarmament would require all states to reveal their material holdings in great detail and to satisfy safeguards agencies through exercises in 'nuclear archaeology' that no materials were missing from their declared inventories. Furthermore, the open access and unhindered challenge inspections sought in the Additional Safeguards Protocol would have to be universalized. Disarmament would not be achievable without a genuine commitment to transparency by states that had possessed nuclear weapons or the capabilities to manufacture them. Moreover, as important as transparency itself, there would have to be confidence that states would respond promptly and forthrightly to any attempted 'breakouts'. It was recognized that the transparency built into disarmament agreements would be a weak instrument if there were no reliable means of responding to deception. All of these conclusions were underlined by the experiences in Iraq—the extensive efforts needed to expose and destroy its weapon capabilities, as well as the vulnerability of states and international regimes to acts of non-compliance and breakout and the problems that arise when great powers disagree on how and whether to enforce compliance.

VI. The deterioration of arms control

If the arms control measures proposed in the early and mid-1990s had come to fruition, and if states had supported and ratified treaties that had been successfully negotiated, there would be greater interstate transparency today. In the event, few of the objectives have been realized. The list of disappointments is long and is becoming longer. It includes the START II Treaty[16] and the CTBT (not in force); the FMCT and START III (not negotiated); the BTWC[17] and the Trilateral Initiative (not concluded);[18] the Additional Safeguards Protocol (too few adherents); and the UN Special Commission on Iraq (UNSCOM), the UN Monitoring, Verification and Inspection Commission (UNMOVIC) and other approaches for achieving the verified disarmament of Iraq (paralysed until given a fresh boost by the UN Security Council in 2002).

[14] Under Article IX.3 of the NPT, the states parties were required to decide, 25 years after entry into force (it entered into force in 1970), whether and for which period or periods to extend the treaty's lifetime.

[15] See, e.g., Fetter (note 7).

[16] The 1993 Treaty on Further Reduction and Limitation of Strategic Offensive Arms, which never entered into force. On 14 June 2002, as a response to the expiration of the ABM Treaty on 13 June, Russia declared that it will no longer be bound by the START II Treaty.

[17] The 1972 Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction (Biological and Toxin Weapons Convention).

[18] If it is concluded, the Trilateral Initiative will entail an agreement between the IAEA and the Russian and US governments on the international verification of fissile materials and parts removed from dismantled nuclear warheads. See also chapters 4, 5, 10 and 11 in this volume.

The reasons for this record of failure are not easily summarized. It began with the political changes in Russia and the USA following the Duma and congressional elections of 1993 and 1994, respectively, which allowed an increasingly insular and mistrustful cast of politicians and their advisers to exert influence over foreign and security policy. Most treaties became unratifiable in Russia and the USA. The retreat from a cooperative and universalist approach to nuclear politics, with its inherent preference for transparency, was exacerbated by India's refusal to sign the CTBT in 1996 and by India's and Pakistan's nuclear explosions in 1998. The nadir was reached with the George W. Bush Administration's disparagement of multilateral arms control, the US withdrawal from the 1972 Treaty on the Limitation of Anti-Ballistic Missile Systems (ABM Treaty),[19] and the exclusion of any verification and transparency measures from the May 2002 Russian–US Strategic Offensive Reductions Treaty.[20]

Although several states played a part in shifting nuclear policy off its previous track, the USA's actions have been the most influential and therefore deserve particular attention. Given its contemporary political, military and economic power, the USA has great influence—through its policies and the example that it sets—over the behaviour of other states. Its influence over their stances on transparency is especially strong. It should be recalled that it has been the USA, more than any other actor, that has historically advocated transparency as a means of building trust between states and avoiding security dilemmas. In gaining their adherence to transparency, the USA has often had to induce states that lack its traditions of openness and democratic accountability to accept measures that were foreign to their experience. If the USA hedges its support for transparency and for the arms control measures in which it is embodied, other states, including China and Russia, might quickly revert to their former preference for secrecy.

Why did the USA move so strongly against the measures, and the ordering strategy, that it had propounded over so long a period? There are four main reasons. The first reason was the growing mistrust of states that were not allied to the USA, a mistrust that had become visceral in some influential communities by the end of the 1990s. Encouraged by China, Iran and Iraq's actual or alleged misdemeanours and by the increasingly Manichaean world view of the US public and media, it came to be assumed that 'states will cheat' irrespective of commitments made under international law. This enveloping mistrust, rampant in the Republican Party, which gained the majority of seats in Congress in 1994, appeared justified *inter alia* by the behaviour of Iraq and North Korea (and by accusation Iran), which had sought cover for their nuclear weapon activities by joining the NPT; by the USSR's and then Russia's massive viola-

[19] For a discussion of the US withdrawal from the ABM Treaty and the responses to it see Kile, S. N., 'Ballistic missile defence and nuclear arms control', *SIPRI Yearbook 2002: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2002), pp. 70–77.

[20] The full text of the Strategic Offensive Reductions Treaty (SORT) is available at URL <http://www.fas.org/nuke/control/sort/sort.htm>. The treaty will enter into force when it has been ratified by both signatories. For the implications of SORT see 'Special Section', *Arms Control Today*, vol. 32, no. 5 (June 2002), pp. 3–23.

tion of the BTWC; and by allegations that China had engaged in espionage in US nuclear weapon laboratories.[21] To make matters worse, the USA began to lose confidence that it could count on international support when acts of duplicity were revealed. Especially after the USA and its European allies disagreed with China and Russia over the military interventions in the Balkans and in Iraq, the UN Security Council lost its ability to act decisively, if at all, in response to acts of non-compliance. As Brad Roberts pointed out, there seemed to be no reliable political answer to the question posed in 1961 by Fred Iklé: 'After detection—what?'.[22] Only when the US Government forced Iraq's non-compliance back on the agenda in 2002 was the UN Security Council persuaded to act.

Second, the financial cost of multilateral verification was rising just as the US belief in its effectiveness was diminishing. The strengthened IAEA safeguards system, together with the verification systems proposed for the BTWC, the CTBT, the CWC, the FMCT and the START treaties, would have required annual expenditures running into several hundred million dollars, a large share of which would have had to be paid by US taxpayers and partly drawn from the US defence budget. The US Congress was becoming increasingly resistant to this level of outlay on measures whose worth it had come to doubt.

Third, the perceived security risk had shifted from an emphasis on nuclear explosives and materials to an emphasis on ballistic missiles which could be armed with nuclear, chemical or biological warheads. The spread of missile capabilities in the 1980s and the 1990s came to be regarded as the main problem needing attention. Especially if the states possessing missiles could not be deterred by the threat of military reprisals, ballistic missiles could expose the USA to blackmail and might reduce its willingness to deploy armed forces in the Middle East and elsewhere. The imminence of the missile threat was stressed by the influential 1998 Rumsfeld Commission Report, whose gloomy conclusions seemed justified by North Korea's firing of a ballistic missile over Japan a month later.[23] Since the Missile Technology Control Regime (MTCR) had been established late in the day (1987) and lacked universal participation, legal underpinnings and instruments of verification, it could provide only a limited solution.[24] Influential groups in the USA became preoccupied (some

[21] On cheating and arms control see Miller (note 5).

[22] Roberts, B., 'Revisiting Fred Iklé's 1961 question, "After detection—what?"', *Nonproliferation Review,* vol. 8, no. 1 (spring 2001), pp. 10–24. On problems of achieving compliance see also Müller, H., 'Compliance politics: a critical analysis of multilateral arms control treaty enforcement', *Nonproliferation Review*, vol. 7, no. 2 (summer 2000), pp. 77–90, both available at URL <http://cns.miis.edu/pubs/npr/>.

[23] Executive Summary of the Report of the Commission to Assess the Ballistic Missile Threat to the United States, US Congress, 15 July 1998, URL <http://www.house.gov/hasc/testimony/105thcongress/BMThreat.htm>.

[24] On the limitations of the MTCR and on possible solutions to the problems posed by the availability of missile technology see Smith, M., 'Missile proliferation, missile defenses and arms control', ed. S. Parrish, *International Perspectives on Missile Proliferation and Defenses*, Occasional Paper no. 5 (Center for Nonproliferation Studies, Monterey Institute of International Studies: Monterey, Calif., and Mountbatten Centre for International Studies, University of Southampton: Southampton, 2001), pp. 24–32, available at URL <http://cns.miis.edu/pubs/opapers/op5/op5.pdf>.

would say obsessed) with finding a technological response in the form of missile defences.

Fourth, scientific and industrial communities in the USA began to see opportunities to develop new and improved technological capabilities unencumbered by international restrictions. Where the Revolution in Military Affairs had given the USA an unchallenged lead in conventional warfare, developments in missile defence and space technology might provide it with a strategic advantage that could not be matched by other states for years or even decades to come. Their advice was heeded by the Bush Administration, which was courting industrial support, regarded technological supremacy as the surest foundation for national security and found it instinctively distasteful that the USA was limiting its freedom to innovate, whatever the benefits following from mutual restraint. The CTBT, the CWC and the BTWC, unlike the NPT, constrained technological development and opened the USA to compulsory international verification. For many in the United States, the ABM Treaty came to symbolize the loss of freedom to exploit what they perceived to be the USA's greatest asset—the capacity to innovate.

Terrorism and transparency

In the second half of the 1990s, there was a move away from both bilateral and multilateral arms control. Many of the treaties and agreements concluded in previous times remained in force, but most proposals on the long negotiating agenda established in the early to mid-1990s came to nothing. Transparency and cooperative security were still preached when governments came together, for example, at the 2000 NPT Review Conference and in its agreed Final Document,[25] but the trend was in the other direction. In developing their responses to the threat of international terrorism demonstrated by the attacks of 11 September 2001, governments have therefore been denied (and have denied themselves) the opportunity to draw on a healthy stock of multilateral treaty instruments and processes.

The state has customarily been regarded as the main 'object of concern' when developing instruments to exert control over WMD and their associated capabilities. A perceptual adjustment had to be made in the 1990s with the emergence of the phenomenon of the 'rogue state', a state that was prepared to violate international norms and obligations in pursuit of its aims. Now international society has to address the risks posed by non-state actors, which by their very nature place themselves beyond governmental regulation and the rule of law.[26]

[25] Final Document of the 2000 Review Conference of the parties to the Treaty on the Non-Proliferation of Nuclear Weapons, NPT/CONF.2000/28, 24 May 2000, available at URL <http://www.iaea.org/worldatom/Press/Events/Npt/npt-2000.shtml>.

[26] Warnings of the dangers of nuclear terrorism date back to the 1970s. See, e.g., Willrich, M. and Taylor, T., *Nuclear Theft: Risks and Safeguards* (Ballinger: Cambridge, Mass., 1974). However, the risk that a terrorist act could involve nuclear material has been treated as secondary until recently.

For terrorist groups, secrecy is fundamental to survival and the pursuit of their ends, whether in national or international contexts. Penetrating that secrecy will always be the first line of defence against such actors. The high priority now being given to containing the threat of international terrorism potentially moves non-proliferation policy deeper into the unregulated world of intelligence gathering and away from the treaty-bound world of external transparency and verification. It also implies that greater attention will have to be given to internal transparency and control in so far as states have to rely on their own institutional devices to protect their citizens against the 'enemy within from without' and to satisfy other states that the internal protection thereby provided will prevent the emergence of a general hazard.

While the balances between them are bound to be adjusted, neither intelligence gathering nor international verification, and neither internal nor external transparency, can in practice provide the protection—and confidence in that protection—that is now required. Only through some combination of all of these approaches can effective security be established. Furthermore, that combination has to be found and practised by the agencies of states acting cooperatively inside and across national frontiers.

There are two essential functions of any non-proliferation policy that addresses terrorist threats: (*a*) the *detection* of WMD capabilities and efforts by actors to develop (and disguise) such capabilities; and (*b*) the *denial of access* to the expertise and material required to manufacture and deliver the weapons. With regard to detection, the first responsibility resides with individual states to discover and to police clandestine activities within their own territories. It therefore involves *inter alia* an exercise of internal transparency practised in conjunction with other states where activities are transnational. This effort is buttressed, in some but not all states, by the instruments of voluntary external transparency (normally international safeguards) which, if effectively applied, enable the state to win confidence that no such activities are taking place on its territory. If, as is often the case, states lack the means, authority or intent to exercise internal transparency, and if external transparency of the voluntary kind is ineffective or non-existent, then the only resort is to intelligence gathering by outside powers. However, this is no panacea. While intelligence agencies may have considerable means at their disposal, their activities inevitably entail the penetration of a sovereign state and, unless the target state consents to the operations, will be resented and resisted. As experiences with Iraq and al-Qaeda have shown, intelligence operations are also extremely fallible.[27] Even the most well-equipped intelligence agency can easily become blinded to the true nature and extent of clandestine activity if it cannot penetrate institutions.

As far as the denial of access to weapon materials and capabilities is concerned, intelligence agencies have a comparatively small role to play beyond monitoring trade and the people who might be engaged in covert transactions.

[27] On the recent failings of the US Central Intelligence Agency see Powers, T., 'The trouble with the CIA', *New York Review of Books*, vol. 49, no. 1 (17 Jan. 2002), available at URL <http://www.nybooks.com/articles/15109>.

The main objectives must be to develop comprehensive inventories of materials and capabilities, to ensure that they are *all* held in installations that are *completely* secure and to establish programmes for rendering them unusable in the medium and long terms. These objectives can be achieved only through states acting singly or in collaboration through formal processes such as the US Cooperative Threat Reduction programme, which has sought to place nuclear matériel in the states of the FSU beyond the reach of hostile actors.[28] There is little if any difference here between the measures aimed at inhibiting access by states or non-state actors. Their effectiveness depends, first, on the abilities of states to exercise internal transparency and control and, second, on their abilities jointly to mount programmes that will achieve the desired ends. Because the principal stocks of weapon material are in the eight states that possess nuclear weapons—China, France, Russia, the UK and the USSR and the de facto NWS India, Israel and Pakistan—international security depends heavily on the cohesion and resources of those eight states, on their interrelations and on the seriousness with which they take their responsibilities.

It therefore seems self-evident that the containment of catastrophic terrorism relies, just as does the containment of weapon proliferation in its traditional form, on the development of a rich panoply of measures. Moreover, the measures adopted in the fields of arms reduction and non-proliferation (whether aimed at state or non-state actors) are interconnected, especially in so far as the main capabilities and stocks of nuclear materials are to be found in the NWS. The implication is that failure in one domain will have repercussions in other domains: relations between the NWS cannot be allowed to 'freewheel' if an effective campaign against the acquisition of WMD by state and non-state actors is to be mounted. Nor can states and peoples be expected to gain confidence that WMD will not be used in anger by 'rogue actors' if transparency is lacking in all its forms.

Come what may, transparency will play an important role as states try to restructure security policies to deal with threats from *all* actors. To be effective and acceptable, however, the processes and practices of transparency will have to be subjected to a set of profound questions, particularly about the relationship between intelligence gathering and verification. How can the secretive, informal and largely unaccountable practice of intelligence gathering be reconciled with the more open, formal and rule-bound practice of treaty-based transparency? If the 'war against terrorism' requires an unprecedented level of cooperation between intelligence services, how can that cooperation be institutionalized and civil rights and the rights of less powerful states be protected? How can international organizations entrusted with treaty verification maintain their integrity if intelligence gathering and transparency measures become inter-

[28] For discussion of the Cooperative Threat Reduction programme and the steps needed to strengthen and extend it see Bunn, M., Holdren, J. P. and Wier, A., *Securing Nuclear Weapons and Materials: Seven Steps for Immediate Action* (Project on Managing the Atom, Belfer Center for Science and International Affairs, John F. Kennedy School of Government, Harvard University, and Nuclear Threat Initiative: Cambridge, Mass., and Washington, DC, respectively, May 2002), available at URL <http://bcsia.ksg.harvard.edu/BCSIA_content/documents/SevenSteps.pdf>; and chapters 4 and 5 in this volume.

mingled in the eyes of states? How, on the other hand, can those organizations inspire confidence if they are enied access to national intelligence? Governments will have to tread extremely carefully when deciding how to extend the reach of their intelligence services and how to manage the interface between intelligence agencies and the institutions involved in treaty verification. They should be especially concerned about the risks that the integrity of verification agencies, and of the IAEA above all others, could be compromised by the ill-judged management of relationships with intelligence agencies.

Transparency and weapon design

One issue in particular has troubled states since the beginning of the nuclear age and has become even more troubling since 11 September 2001. It concerns the public availability of information pertaining to the design and use of nuclear weapons. Although much information on the science and technology of nuclear explosives has entered the public domain since the discovery of nuclear fission in 1938, it has usually been assumed to have value only to states which possess the resources to mount significant weapon programmes and wish to arm themselves for deterrence purposes. This assumption can no longer be regarded as valid given the additional diffusion of knowledge through the Internet, the possible theft of weapon-grade material from sites in the FSU or elsewhere, the mobility of weapon designers and the realization that terrorists are prepared to cause mass casualties. Terrorist groups may also be satisfied with a crude device (including a radiological device) that can serve as a 'weapon of mass effect'.

There is no obvious solution to this problem. No doubt intelligence agencies will be monitoring pertinent Internet sites and their users. The only comfort comes from the experience with actual weapon manufacture: it takes much more than knowledge of the workings of nuclear warheads to manufacture a usable weapon. Controls must therefore focus on the diffusion of designers more than on designs, and on weapon-grade materials and the equipment used in weapon manufacture.

VII. Conclusions

Transparency is complex in both concept and practice. It is multidimensional, it is not always a good thing, and transparency measures have to be orderly, honest and widely adopted if they are to win the confidence and support of states. There has to be trust in the processes of transparency, in the intentions of those pressing for transparency, and in the capacity and willingness of states to respond to its abuse. Although that trust has been eroded in recent years, transparency has been, and will remain, an indispensable device for limiting the dangers posed by nuclear weapons.

The world today faces a paradox. The need for stronger transparency measures and for their wider application, and the availability of technical means for meeting that need, have never been greater, as other chapters in this volume attest. Yet the political scope for institutionalizing transparency, and for further developing the instruments of verification, has seldom been so constrained, for all the reasons discussed above. Unfortunately, the international cooperation that followed the 11 September 2001 terrorist attacks has not yet yielded results in the field of arms control and transparency. Nor have the nuclear arms reductions announced in November 2001 by presidents George W. Bush and Vladimir Putin provided reassurance, since they are not yet legally binding and are not subject to verification.[29]

Although this situation has been caused by many factors, the current malaise cannot be remedied if the US Government remains antagonistic to arms control. US concerns about the efficacy of security regimes in the post-cold war environment have not been groundless. Where its recent approach invites criticism is in its lack of balance. To believe that a hegemonic state, however great its resources, can achieve security in the contemporary international system just by enhancing its military capabilities and threatening retribution is to play with illusion, just as it is an illusion to believe that all the answers lie in cooperative security. As the present author has observed elsewhere, nuclear 'order is much more than a structure of power and a set of deterrent relations, just as it is much more than a security regime rooted in international law. It is a complex edifice founded on instruments of *both* power and law which is held together by mutual interest *and obligation*'.[30]

Similarly, it is an illusion to believe that the USA can freely and without consequence choose the arms control treaties and institutions it will support—that it could withdraw from the CTBT, the BTWC and the ABM Treaty while expecting other states to continue honouring commitments to the NPT and other treaties that the USA still values. Ambassador Richard Haass, Director of the Policy Planning Staff of the US Department of State and a rare exponent of multilateralism within the Bush Administration, has stated the US position.

> Today, at the dawn of a new century, the Bush Administration is forging a hard-headed multilateralism suited to the demands of this global era, one that will both promote our values and interests now and help structure an international environment to sustain them well into the future. . . . Our desire to work cooperatively with others does not mean, however, a willingness to agree to unsound efforts just because they are popular. . . . We have, moreover, demonstrated that we can and will act alone when necessary.

[29] In these respects, the 2002 SORT (see note 20) falls far short of the previously proposed START III accord. START III did not envisage any reserve stocks of nuclear warheads that could be returned to use and was expected to include substantial measures to verify warhead dismantlement.

[30] Walker, W., 'Nuclear order and disorder', *International Affairs*, vol. 76, no. 4 (Oct. 2000), pp. 703–24.

Our right to self-defense is unquestioned. . . . A commitment to multilateralism need not constrain our options—done right, it expands them.[31]

Unfortunately, the Bush Administration has so far shown rather little penchant for even this 'hard-headed' multilateralism.

If the great powers come to regard arms control as an instrument to be used strictly at their own discretion and convenience, the institution of arms control will inevitably lose prestige and the capacity to shape the behaviour of states. The same applies to transparency. States cannot be expected to open their activities to the scrutiny of other states if the latter are barring their doors. A respect for reciprocal obligation remains essential to transparency and to the establishment of a durable security order.

The external transparency discussed in this chapter is fundamentally a servant of international law and of the attempt by states to adopt common norms and rules of behaviour in their mutual interest. It has little meaning or utility outside that framework. Transparency of the voluntary kind thus depends on the strength of commitment to international law and its application in arms control. Transparency cannot play its part if that commitment no longer lies at the centre of the security strategy of states. One can only hope that the crisis over Iraq that is emerging as this book goes to press will end with a stronger commitment to cooperative measures.

[31] Haass, R., 'Multilateralism for a global era', Speech at the Carnegie Endowment for International Peace Conference After September 11: American Foreign Policy and the Multilateral Agenda, 14 Nov. 2001, Washington, DC, available at URL <http://usinfo.state.gov/topical/pol/terror/01111413.htm>.